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Exploring how and why social prescribing evaluations work – A Realist Review

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ABSTRACT

Objective*:* The evidence base for social prescribing is inconclusive, and evaluations have been criticised for lacking rigour. This Realist Review sought to understand how and why social prescribing evaluations work or do not work. Findings from this Review will contribute to the development of an evidence-based evaluation framework and reporting standards for social prescribing.

Design: A Realist Review.

Data sources*:* ASSIA, CINAHL, Embase, Medline, PsycInfo, PubMed, Scopus Online, Social Care Online, Web of Science and grey literature.

Eligibility criteria*:* Documents reporting on social prescribing evaluations using any methods, published between 1998 and 2020 were included. Documents not reporting findings or lacking detail on methods for data collection and outcomes were excluded.

Analysis*:* Included documents were segregated into sub-cases based on methodology. Data relating to context, mechanisms and outcomes and the programme theory were extracted and context-mechanism-outcome configurations were developed. Meta-inferences were drawn from all sub-cases to refine the programme theory.

Results*:* 82 documents contributed to analysis. Generally, studies lacked in-depth descriptions of the methods and evaluation processes employed. A cyclical process social prescribing evaluation was identified, involving preparation, conducting the study and interpretation. The analysis found that co-production, alignment, research agency, sequential mixed-methods design and integration of findings all contributed to the development of an acceptable, high quality social prescribing evaluation design. Context-Mechanism-Outcome Configurations relating to these themes are reported.

Conclusions*:* To develop the social prescribing evidence base and address gaps in our knowledge about the impact of social prescribing and how it works, evaluations must be high quality and acceptable to stakeholders. Development of an evaluation framework and reporting standards drawing on the findings of this Realist Review will support this aim.

Registration*:* PROSPERO registration CRD42020183065.

ARTICLE SUMMARY:

- This is the first realist review of evaluation methodology, specifically in relation to social prescribing evaluation.
- Applying a realist logic of enquiry allowed generation of a theory underpinning how and why social prescribing evaluations work.
- Inclusion of published and grey literature granted the reviewers insight into different contexts within which social prescribing evaluations take place.
- Descriptions of social prescribing evaluation methods and processes lacked detail of mechanisms, causality or decision-making processes, which would be useful to further refine the programme theory.
- This Realist Review sits within the broader ACCORD study to develop an evaluation framework and reporting standards, findings will be directly applied in practice.

INTRODUCTION

Attention on social prescribing is rapidly increasing. As a concept, its applications are broad, and it has been proposed as a solution to improve sustainability of general practice[1]; reduce health inequalities[2]; address the social determinants of health[3]; tackle loneliness and social isolation[4]; improve the health and well-being of citizens[5] and support recovery from COVID-19[6]. Given the breadth of its applications it is unsurprising that social prescribing services are highly heterogeneous, and the term is used to refer to a variety of models and activities[7]. Aims of social prescribing reported in the literature are wide-ranging, including improved mental, physical and social well-being, optimised health service use and reduced health service costs[8]. There is no agreed definition of social prescribing[9], but it is generally understood to involve referral to non-medical resources in the community, with the goal of improved health and well-being[10-12]. This typically involves a link worker, also known as a community connector or navigator, who works with the individual to identify their needs, co-produce goals and connect them to resources in their community[13-15].

In parts of the United Kingdom, the growing interest in social prescribing has been accompanied by substantial funding. The NHS Long Term Plan for England committed to placing 1,000 social prescribing link workers in primary care networks by 2020/21, benefitting 2.5 million people by 2023/24, through 900,000 referrals[16]. A further £5 million of funding for social prescribing has since been granted to support COVID-19 recovery[6]. Social prescribing in the other devolved nations has not received the same NHS funding, although the Welsh and Scottish Governments have committed to developing a social prescribing offer[17,18]. As such, their social prescribing models are predominantly based within the community and have been developed using a bottom-up approach[11,19,20].

Diverse social prescribing models and services have been evaluated using heterogeneous designs and methods. The application of these varying designs and methods has resulted in an inconsistent, inconclusive evidence base for social prescribing[1,15]. Evaluations using qualitative and uncontrolled quantitative designs have reported improvements in health, well-being, social isolation, and chronic health conditions[5,21-24]. However, these findings have not been corroborated with studies employing controlled designs[25-27]. Discrepancies in the evidence base have also been identified in mixed-methods studies[9] and systematic reviews[28]. Gaps in our understanding of the individual, community and system impact of social prescribing and the mechanisms through which social prescribing works, for whom and in what circumstances remain[7,29]. Randomised controlled trials are considered the gold standard for generating evidence[30], however their application in the context of social

prescribing evaluation is contentious given the moral and ethical implications of denying access to services which may improve health and well-being[31]. Instead, a co-ordinated, consistent framework for evaluation is required to produce comparable results which contribute to the social prescribing evidence base[1].

To develop such a framework, we argue that it is important to understand the social prescribing evaluation literature to date. The present Realist Review seeks to provides insight into how and why social prescribing evaluations work, and identify good practice, and areas for improvement. By providing an understanding of the current state-of-play in social prescribing evaluation, it will inform the development of an evidence-based evaluation framework.

Realist Review

A Realist logic of enquiry, based on Realist philosophy of science, is a theory-driven approach which seeks to explore the interaction between context, mechanism, and outcome[32]. It asks the question, *what works, for whom and in what context*[33], going beyond attempts to understand whether something works, to identify mechanisms through which certain outcomes are generated, when triggered by a given context[34]. A Realist Review, also known as a Realist Synthesis, applies the Realist logic of enquiry to the secondary analysis and synthesis of primary research studies[35,36]. A table with definitions of terminology used in this Realist Review can be found in Table 1.

Table 1. Realist glossary of terms

Term	Definition
Realist Theory	A theory which makes reference to the underlying generative mechanisms that exist in the domain of the real[37].
Realist Review	The process of evidence review that follows the Realist approach[38].
Context	Any condition that triggers and/or modifies the behaviour of a mechanism[39].
Mechanism	Underlying entities, processes, or structures which operate in particular contexts to generate outcomes of interest. Mechanisms are causal, hidden, context sensitive and generate outcomes[40].
Outcome	The impact resulting from an interaction between mechanisms and contexts[41]. Intended or unintended outcomes triggered by a

	mechanism within a given context. These may be proximal (immediate) or distal (future).
Programme Theory	The ideas and assumptions underlying how, why and in what circumstances complex social interventions work[34]. An abstracted description and/or diagram that lays out what a programme/family of programmes comprises and how it is expected to work[42]. Programme theory explains the sequence of implementation of an intervention and provides theories of change to explain how outcomes are generated by mechanisms. It is thus a theory of causation and implementation.
Context-Mechanism-Outcome Configuration (CMOC)	A statement that describes the relationship between context, mechanism and outcome, such that a context triggers a mechanism, which then produces an outcome[39].

Framed as a new model for systematic review[36], the Realist approach to synthesis has several benefits which make it an appropriate choice to explore the topic of social prescribing evaluation. The Realist approach accepts complexity and provides a technique to understand complex interventions[43]. Social prescribing is complex[13], as is its evaluation, given the use of many different approaches in different contexts. Previous systematic reviews of social prescribing evaluations have provided descriptions and critiques of the evidence base and evaluation approaches used[1,15,28], but have not gone into depth about how and why they work, or do not work. Of particular significance and benefit to the present Review, is the breadth of document types and resources that can be drawn on in a Realist Review[35,44]. Realist Reviews reject the hierarchical approach for assessing research quality[35] and accept a breadth of methodologies and approaches. Due to the community-based nature of social prescribing, and the aim of the Review to understand the various contexts within which social prescribing evaluation occur, it was important to not limit included documents to the published literature.

METHODS

The present Realist Review was conducted between April 2020 and June 2021. The Review protocol was registered with PROSPERO (CRD42020183065; Supplementary file 1). The protocol set out the planned steps for the synthesis, acknowledging that the process would

be iteratively undertaken. As the review progressed and evolved, a number of changes were made to the protocol which we describe here. Firstly, it became apparent that the scope and breadth of the five research questions initially set out in the protocol was too broad. Through progressive focusing[45,46], the Review team agreed to narrow the scope to focus only on *how* and *why* social prescribing evaluation works. The intended duration of the Realist Review was 6-months, but given the complexity and depth of the topic, this was extended to 14-months. A final search of the literature was planned at the end of the synthesis process. Through discussions it was agreed to not complete this final search due to pragmatic limitations, and the extent of data saturation for each of the CMOCs presented in the review. An additional Review team member (MD) joined the Review after publication of the protocol and contributed to data extraction and synthesis. Finally, as discussed in step 5, no documents were excluded on the basis of relevance or rigour, but appraisal was noted as a descriptive characteristic.

An advisory group was convened with membership of social prescribing, evaluation and Realist experts and stakeholders, including members of the public. A wider social prescribing infrastructure group[47] was also drawn upon to support the development of the Realist Review design and comment on findings. These groups contributed to the development of the search strategy and commented on preliminary findings and CMOC development.

Six iterative steps were followed in the process of conducting this Realist Review. The design was informed by the steps set out by Pawson[36] and supplemented by additional approaches taken in other Realist Reviews which provided further depth and information regarding searches, data extraction, analysis, and synthesis[13,35,44,48-50]. The RAMESES publication standards[32] were used for reporting (see Supplementary file 2).

Step 1: Identifying the review questions.

This Realist Review is embedded within the ACCORD study, which aims to develop an evaluation framework and reporting standards for social prescribing evaluation using Realist and consensus methods. The Review scope and purpose were guided by the aim of ACCORD, and therefore aimed to address the following two questions: '*How do social prescribing evaluations work?'* and '*Why do social prescribing evaluations work?'*.

Step 2: Searching for studies.

A formal search strategy was developed based on an initial, unstructured background search of the literature and discussions with social prescribing stakeholders. Exploration of possible substantive theory, including different evaluation methodologies and designs, was also undertaken. This informed development of the initial programme theory.

Nine online databases were searched for documents referring to social prescribing, community and evaluation, published between 1st January 1998 and 31st May 2020. A grey literature search was also undertaken in Wales for public evaluation documents and a document request was sent out through extant social prescribing networks. Details of the databases and search strategy can be found in Supplementary file 3.

The formal published literature search yielded 2904 records and an additional 144 records were identified through the grey literature and network request. See Figure 1 for a PRISMA diagram detailing the search results.

[INSERT FIGURE 1]

Figure 1. PRISMA diagram of document selection.

Step 3: Study selection

Documents included in the Realist Review were required to make some reference to the social prescribing/link worker process but could focus on any component of the pathway. All evaluation and monitoring designs were included, but documents lacking description of evaluation design or not reporting findings (e.g., protocols, editorials) were excluded.

Screening of titles and abstracts was undertaken by ME, with a random sample of 10% of citations reviewed by JD to check for consistency in application of the screening tool[13]. Any disagreements were reviewed by CW and resolved through discussion[51]. Following title and abstract screening, 159 full-text documents were screened for eligibility by ME, with 10% screened by CW. Disagreements were discussed and resolved within the team. As a result, 82 documents were included in the Realist Review.

Step 4: Quality appraisal

All included documents were assessed for relevance to the initial programme theory and ability to contribute to context-mechanism-outcome configurations. Documents were appraised and categorised as ‘high’ (n=15), ‘moderate’ (n=35) and ‘low’ (n=32) in usefulness and relevance. All documents were included in the Review, regardless of their appraisal, as it was agreed that even documents with ‘low’ relevance may have the potential to contribute ‘nuggets’ of information[52]. Documents were also appraised for rigour and trustworthiness of methods and quality of reporting. However, as this Review focused on evaluation methods and designs, rather than evaluation findings, it was deemed inappropriate to exclude documents on the basis on low rigour, as these documents would still contribute to the programme theory, and the exploration of how social prescribing evaluations do and do not work.

Step 5: Data extraction

Documents were split by methodology into four sub-cases for data extraction and management (Figure 1; Table 2); qualitative (n=21), quantitative (n=14), mixed methods (n=37) and reviews (n=10). Data extraction was undertaken by ME, using a bespoke data extraction Excel file, which captured document characteristics and context-mechanism-outcome configurations (CMOCs) and themes. Coding was inductive but guided by four questions which explored; whether the extracted data referred to a context, mechanism, or outcome; whether a partial or complete CMOC could be identified; whether the data was relevant to social prescribing evaluation and the programme theory; and whether the data was sufficiently trustworthy and rigorous[48]. As with screening, 10% of documents were reviewed and coded by CW. All preliminary CMOCs were coded and gathered under themes. If-then statements were developed for each CMOC to clarify the relationship between the three components, prior to data synthesis.

Step 6: Data synthesis

Using the preliminary codes, CMOCs were reviewed and gathered into overarching themes for each sub-case. A meta-matrix was used to identify common themes and codes across the four sub-cases. Using this, 77 codes were synthesised into 13 broader themes. These themes and corresponding preliminary CMOCs were mapped onto the initial programme theory. Diagrams were created and iteratively refined to depict our thinking and the contribution of different documents to different parts of the programme theory. The CMOCs and programme theory were iteratively refined through ongoing document analysis and discussions with the Review team and advisory group.

Patient and Public Involvement

This Realist Review sits within the ACCORD study. The study was presented to the PRIME Centre Wales SUPER public & patient involvement group in its early phases of development. Comments from this group led to recruitment of two permanent PPI representatives to the WSSPR steering group to specifically support the ACCORD study. An additional PPI representative joined the Realist Review advisory group and commented on ideas and findings.

RESULTS

Document characteristics

Overall, 82 documents were included in this Realist Review (see Figure 1)[1,2,5,8,9,21-24,26-28,31,53-121]. Documents were split by methodology into four sub-cases, with representation from both the published and grey literature, although the majority of grey literature documents employed mixed methods (Table 2). Generally, studies lacked in-depth descriptions of the evaluation processes and methods. Most described evaluations of general, holistic social prescribing processes, including a link worker. Others included Arts on Prescription, Nature-based interventions, Welfare advice services, Time Credits programmes, Museum-for-Health programmes, National Exercise on Referral Services and nurse navigation. Documents were predominantly from the United Kingdom (England, n=43; Wales, n=26; Scotland, n=6; Northern Ireland, n=1), with few documents from Europe (n=4), Canada (n=1) and Australia (n=1). The formation of the research team varied between evaluations undertaken by independent teams, service-providers, and mixed-teams. A quarter of the documents provided no description of the composition of the research team. Supplementary file 4 provides a table of studies included in the review and their characteristics.

Table 2. Summary of documents within each sub-case

	Published	**Grey**	**Total**
Qualitative	20	1	21
Quantitative	13	1	14
Mixed methods	15	22	37
Review	8	2	10
Total	56	26	82

Main findings

The initial programme theory provided a linear explanation of social prescribing evaluation with no exploration of mechanisms (see Figure 2). This provided a basis for exploring context-mechanism-outcome configurations (CMOCs) which were identified through data extraction.

[INSERT FIGURE 2]

Figure 2. Initial programme theory for social prescribing evaluation

When considering social prescribing evaluation as an intervention, identification of outcomes was challenging. Three outcomes were identified, firstly, that the social prescribing evaluation design was acceptable to all stakeholders. Secondly, that it was high-quality, in

that it employed rigorous evaluation techniques and was reported transparently. The final outcome was more distal; a nuanced understanding of the impact and effects of social prescribing. Through achievement of the first two outcomes, and the mechanisms discussed here, social prescribing evaluations extend our knowledge and understanding of the topic and identify areas for further research.

Data synthesis resulted in identification of five key themes which underpin our refined programme theory; *co-production, alignment, agency, sequential design* and *integration*.

Co-production with mixed stakeholder teams

If social prescribing evaluations are co-produced by mixed-teams (C), then sharing of experiences, expertise and diverse perspectives (M), increases evaluation acceptability (O) and trustworthiness (O).

Twenty documents contributed to the development of this CMOC[5,9,23,24,31,58,60,61,63,73,74,77,82,84,89,92-94,102,109]. In the early stages of the evaluation development, involvement of a breadth of stakeholders (e.g. social prescribing practitioners, service providers, commissioners, community assets, individuals receiving social prescribing) facilitates the co-development of an acceptable and trustworthy evaluation design. Materials are co-produced, based on existing literature and experiences of stakeholders, who can then comment on acceptability of design features for prospective participants. Where these aspects are informed by the views of stakeholders, participant burden may be reduced, thus improving completion rates. Evaluations were frequently reliant on service providers for access to participants and data collection. Where those service providers were part of the research team, they held a sense of investment, and participant recruitment was more successful. Whilst this does pose a risk of bias, randomised approaches to participant recruitment were not effective in yielding sufficient participant numbers. A balance must therefore be struck between data integrity and feasibility of recruitment strategy. Improved trustworthiness of the evaluation is also fostered through co-production and sharing expertise and diverse perspectives. Reporting of public involvement in the included documents was sparse, with only six of the included 82 documents detailing their approach. However, those which did benefitted from access to diverse perspectives, contextual information and insight. This was crucial in developing trusting relationships with the wider community who were subsequently more engaged with the research.

Alignment between the intervention and evaluation design

If evaluators have strong contextual knowledge about the intervention and its' aims (C), then they can align the research question and design (M) to provide a coherent, cohesive evaluation (O).

Twenty-four documents provided evidence for this mechanism[8,9,22,27,28,31,58,61-63,66,68,70,71,73,74,77,82,88,94,112,117,120]. In designing a social prescribing evaluation, the research team must develop a comprehensive understanding of the intervention and how it may be working. This may be achieved through stakeholder discussions, service mapping, service observation, applying a framework or developing an initial programme theory. This thorough knowledge about the intervention is used to inform the development of the research questions and evaluation design. By completing this step, the evaluation is poised to assess whether the intervention is achieving what it set out to. Where possible, corresponding validated tools can then be selected for data collection, although a lack of appropriate outcome tools for social prescribing evaluation was highlighted in multiple documents. Clear reporting and presentation of the alignment between intervention aims and context, evaluation aims, evaluation design and outcomes is critical for the evaluation user, allowing them to draw conclusions about the intervention and its impact. An important caveat to this mechanism is that evaluations should not be designed too narrowly, only focusing on the aims of the intervention, as this risks missing unanticipated benefits or outcomes which may arise. The benefit of mixed methods designs which can capture outcomes aligned with the aims and undertake exploratory research is evident here.

Agency to make decisions

When there are pre-determined aspects to an evaluation (C), the researcher does not have the freedom to make decisions regarding the execution of the study (M), which minimises the quality of the data and evaluation (O).

Fifteen documents contributed to this CMOC[2,26,27,31,57,59-62,66,68,74,89,95,104]. Evaluations were rarely implemented alongside services and were more commonly commissioned and designed after service implementation. This often resulted in elements of the evaluation, e.g., the outcome tools used, research questions or methodology, being pre-determined by service developers, commissioners, or routine data monitoring systems. Lack of researcher agency during data collection was also common and negatively impacted on data quality, limiting insights and ability to draw conclusions. This was evident where data was collected by a third party, resulting in inconsistencies in timepoints when data was collected, incorrect completion of validated tools, incomplete datasets, insufficient data collected and self-reporting biases. Financial constraints and insufficient funding may be

responsible for this lack of agency, impacting on researcher ability to collect data, use control groups, have sufficient follow-up periods and employ rigorous designs. We anticipate that the impact of funding on researcher agency and rigour is greater than that reported in the literature.

Use of a sequential, iterative design

If researchers use a mixed-methods sequential design for data collection (C), they can use existing data to inform subsequent design and data collection (M) to provide a nuanced, stronger understanding of the effects of social prescribing (O).

Thirteen documents provided evidence for this theme[22,23,31,56,61,63,66,74,88,102,112,114,115]. Use of a sequential mixed methods approach enabled researchers to use findings and insight from prior stages of the research to inform the design and development of subsequent stages. This was observed bi-directionally. Findings from quantitative components were used to inform the development of interview questions and areas of exploration in subsequent qualitative research. Datasets were used to develop purposive sampling strategies for qualitative research, including identification of different demographic groups and for individuals who responded differently to the social prescribing intervention. Exploratory qualitative research was used as a basis for designing quantitative research and selecting appropriate outcome tools. Qualitative observations were beneficial in identifying unanticipated benefits, particularly where these were not captured by selected outcome tools. This aided the researcher in developing a cumulative understanding of the social prescribing intervention and its effects.

Integration of findings to produce a full picture

This theme was heavily supported; forty-two documents contributed to its' development and it is split into two CMOCs[2,5,9,21-24,26,27,31,58-60,62,66-68,72,74,75,77,79,82,85,86-88,92-94,102,107-110,112-115,117,120,121].

When there are multiple sources of data (C), researchers can integrate and triangulate findings (M) to provide a nuanced, stronger understanding of the effects of social prescribing (O).

Social prescribing evaluations generate multiple sources of data. This includes data collected from different participant groups, using different methods and gathered at different time points. Triangulation of perspectives between different participants, particularly non-participant stakeholders, offers a more complete view of the broader impact of different dimensions of the intervention and the experiences of non-attenders, or hard to reach groups. A social prescribing evaluation does not sit in isolation, and the existing literature

and previous research conducted about social prescribing must also be used for contextualising and explaining findings from their research, to contribute to the developing evidence base.

If qualitative and quantitative findings are reported separately (C), then there is a lack of integration (M), which results in a fragmented understanding of the effects of social prescribing (O).

Many of the documents included in the Review reported on single components of broader mixed method, multi-component studies. Despite this, findings and conclusions in different components of the same study were rarely integrated or triangulated. This lack of integration resulted in a fragmented, disjointed understanding of the intervention and its' impact. Where studies are presented independently and not contextualised and integrated with existing knowledge, the evaluation user is unable to fully understand the intervention and unpick its inherent complexity. Studies which did successfully integrate their findings, either in the reporting of their results or in an overall interpretative analysis section provided the reader with an overarching understanding of the impact of social prescribing and a more nuanced understanding of the effects. Where possible, researchers should provide a commentary on the overall findings drawn from integrated mixed methods research.

Development of the refined programme theory

The initial programme theory (Figure 2) presented a logic model upon which contexts, mechanisms and outcomes were placed as they were extracted from the literature. Initially, a linear relationship was proposed between the three identified components of social prescribing evaluation: preparation (1), conducting the study (2) and interpretation (3). During the interpretation component (3), identification of new research questions and proposals for future research occur. We therefore propose a cyclical relationship between the three components, although acknowledge this may not consistently occur (represented by the dotted line). The five identified themes discussed above and their corresponding CMOCs relate to each of these components. Elements of the overarching context within which the evaluation takes place; e.g. funding, stakeholder involvement, service status, contextual knowledge, theoretical stance and the target population, were also considered relevant for inclusion in the refined programme theory.

The refined programme theory sought to represent the interplay between the overarching contexts, the themes and corresponding CMOCs in generating the outcome of an acceptable, high quality social prescribing evaluation, within the realm of the three

components. The refined programme theory for social prescribing evaluation can be found in Figure 3.

[INSERT FIGURE 3]

Figure 3. Refined programme theory for social prescribing evaluation

DISCUSSION

The present Realist Review sought to understand how and why social prescribing evaluations work. It included 82 social prescribing evaluation documents sourced from the international published literature and grey literature in Wales. A range of evaluation approaches and methodologies were employed, but documents lacked in-depth detail and descriptions of these approaches. Systematic reviews of social prescribing have also emphasised the poor reporting of their evaluations[28]. Five themes were identified, with corresponding Context-Mechanism-Outcome Configurations (CMOCs) through which the social prescribing evaluation worked to deliver an acceptable and high-quality evaluation.

The value of stakeholder involvement from the outset of the evaluation was evident, it yielded a sense of investment, offered insight and contextual knowledge and improved acceptability of the design through co-production. Chatterjee et al.[61] also highlighted the benefit of stakeholder involvement, in integrating the views and perspectives of diverse groups and understanding their expectations. Utilisation-focused evaluation[122] is evaluation undertaken with the intended users at the forefront. It posits that evaluations will be more useful and effective if intended users have a sense of ownership over the evaluation. The utility and design of the evaluation is therefore constantly informed and guided by the stakeholders. The lack of patient and public involvement (PPI) in the included documents was surprising. Social prescribing is a person-centred intervention[123], and this should be reflected in the design of its evaluation. PPI is widely advocated for in research and its benefits are well known[124] and were evidenced in the studies which involved the public in this Review. The UK Standards for Public Involvement[125] provide guidance on good practice and must be followed to garner effective social prescribing evaluations.

Mixed methods approaches were optimal for gaining a nuanced, in-depth understanding of the social prescribing intervention under evaluation, particularly when used sequentially and findings were integrated. Often this integration was missing from the evaluation documents, resulting in a partial view of how services were working[62]. Even where each component of the mixed methods study was reported separately, the depth and nuances were lacking. Going forward, evaluations must report on the integration of different study components and the relationship between their findings and the existing literature. This will result in

cumulative development of the evidence base, minimising duplication and contributing to a cohesive understanding of social prescribing.

Given the inconsistencies in the evidence base, researchers have called for a co-ordinated framework for social prescribing evaluation[1,15,28]. The refined programme theory presented here offers principles for good practice in social prescribing evaluation. These provided the foundation for the development of a series of evidence-based recommendations for social prescribing evaluation (Table 3). These recommendations will directly feed into the development of the evaluation framework for social prescribing through the ACCORD study. Provision of such a framework will be particularly valuable given the limited evaluation capacity in practice[14,126]. It will provide clear guidance and support for conducting monitoring and collecting data, which can be used in subsequent evaluations, mitigating the effects of low researcher agency and control. Similarly, the need for reporting standards was made clear through this Review. The sparsity and lack of detail in reporting the methods, alignment and findings of social prescribing evaluations has been identified elsewhere[8,28].

Finally, the need for sufficient funding and investment in social prescribing evaluation must be addressed. Evaluations to date have been criticised for lacking rigour and having a high risk of bias[1,15]. An evaluation framework will only be useful if it is accompanied with funding to undertake high-quality, acceptable evaluations of social prescribing. Some evaluations included in this Review alluded to the negative impact of limited funding, but the impact is anticipated to be much larger. Future research needs to explore the funding requirements for social prescribing evaluation and monitoring, and assess how this may change over time, as the evidence base for social prescribing develops, and the needs and priorities that it seeks to address change.

Table 3. Recommendations for social prescribing evaluation

1. Apply a mixed-methods design to produce an evaluation which captures the impact of social prescribing at multiple levels.
2. Where possible, design social prescribing evaluations iteratively, so that each stage can build upon the previous stage so knowledge can be accumulated and the evidence base can continue to grow.
3. Undertake a mapping exercise to identify all stakeholders for a social prescribing evaluation. Involve stakeholders from the outset to co-produce the study design and materials.

4. Involve stakeholders in the interpretation, analysis and dissemination of findings so that the evaluation is grounded in the real world and findings can be translated back into practice, to make a difference to people involved in social prescribing.
5. Involve members of the public throughout social prescribing evaluation in a meaningful way. Follow the UK Standards for Public Involvement and report public involvement when disseminating findings.
6. Take time at the start of the evaluation, before the study design is determined, to understand the social prescribing intervention or service that is going to be evaluated. Identify the aims, objectives, participants, context, setting, activities, processes that are involved.
7. Align the evaluation with the social prescribing intervention so that the evaluation can answer questions that are relevant to the intervention and to stakeholders.
8. Seek advice or use an evaluation framework to inform evaluation decision making. This will maximise data quality, and ensure a consistent approach which can be compared with other similar evaluations.
9. For rigorous evaluations of social prescribing, remove the burden on link workers and use independent researchers to collect data at the appropriate time point.
10. Provide sufficient funding for social prescribing evaluations, to ensure that they can be undertaken rigorously, without bias, to address gaps identified by services or in the literature.
11. Integrate mixed methods findings to generate a more in-depth, nuanced understanding of social prescribing, how it works, for whom and in what context.
12. Triangulate findings from multiple data sources and different perspectives to generate a more in-depth, nuanced understanding of social prescribing, how it works, for whom and in what context.
13. When using mixed-methods or conducting a multi-component study, produce an overarching commentary or narrative, explaining the links between the different components and identifying remaining gaps for future research.
14. Provide in-depth descriptions of methods used and decisions made to facilitate judgments about the rigour and quality of the study, and to enable the study to be replicated in different contexts.

15. Report good practice, strengths, successes, failed approaches and methods to mitigate challenges in social prescribing evaluation to support future evaluators.

Strengths, limitations and future research directions

A strength of this Realist Review is its application of a Realist logic of enquiry to a novel area; social prescribing evaluation. To our knowledge, this is the first Realist Review in this area, and the first exploring evaluation overall. Previous systematic reviews had provided descriptive commentaries about the social prescribing evidence base and evaluations to date[1,28,61]. They critiqued the methods employed and highlighted low rigour and a high risk of bias. However, they did not seek to explore the reasons as to why this may have occurred, and explain the weaknesses in the evidence base, and what can be done to develop successful social prescribing evaluations. This Review addresses this knowledge gap and highlights mechanisms through which evaluations may be acceptable, high quality and produce a nuanced understanding of social prescribing. A series of recommendations (Table 3) for social prescribing evaluation have been generated based on the programme theory from this Realist Review, which will be useful for people conducting evaluations of social prescribing across the spectrum.

Another strength of this review is its placement within the ACCORD study. The findings from the Realist Review will be used in conjunction with two consensus studies, using Group Concept Mapping[127] and a world café approach[128] to explore social prescribing evaluation. Taken together, these studies will inform the development of an evidence-based, evaluation framework, reporting standards and training materials for people undertaking social prescribing evaluations. Direct application of the findings and their relevance to these outputs, which will be widely disseminated, fits with the translational model of research[129]. It means that findings will be directly relevant and have a direct impact on the progress of social prescribing evaluations in the future.

As previously mentioned, the documents included in this Realist Review generally lacked in-depth information regarding the methods, design and processes used for their evaluations. Evidence syntheses are reliant on secondary data, and how findings are reported by authors[41]. This proved challenging for this review, as documents rarely provided in-depth explanations of the mechanisms, causality or decision-making processes, which could contribute to context-mechanism-outcome configurations. An example of this is the lack of information about how social prescribing evaluations were funded and the funding allocated to them. Funding is an important contextual factor, which will likely impact on how the rest of

the evaluation is able to be undertaken. However, where studies lacked information about the funding, it was not possible to understand the full impact, and the mechanisms through which this may have impacted the outcomes. This highlights a clear need for transparent reporting and reporting standards for social prescribing evaluations so that evaluation users have access to the necessary information to make their own judgments about the quality and rigour of the evaluation.

Conclusions and recommendations

To our knowledge this is the first attempt to apply a Realist logic of enquiry to the issue of evaluation, particularly in the context of social prescribing. This Realist Review offers insight into the current status of social prescribing evaluation, it identifies how and why social prescribing works, barriers to its success and examples of good practice. The review also clearly highlights the importance of a standardised evaluation framework and reporting standards for social prescribing going forward. A series of recommendations have been developed based on the findings, which will feed directly into the ACCORD study and are useful for practice and research in the undertaking of future social prescribing evaluations. The next stage of this programme of work is to develop and test an evidence-based evaluation framework and reporting standards for social prescribing, using the evidence from this Review and consensus research.

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STUDY PROTOCOL

Provided in Supplementary file 1.

COMPETING INTEREST

The authors do not have any competing interests to declare.

DATA SHARING STATEMENT

This study was a review of secondary data and no new primary data was generated. Additional information about the extracted data are available from the corresponding author upon request.

ETHICAL APPROVAL

As this Realist Review drew upon secondary evidence, ethical approval was not required.

AUTHOR CONTRIBUTIONS

ME prepared the initial protocol, developed the search strategy, facilitated the advisory group, undertook the main searches and document screening at title, abstract and full-text level, carried out the coding and development of CMOCs and refined programme theory and prepared the final report. ME prepared the full manuscript.

MD supported development of CMOCs and the refined programme theory, contributed to the interpretation of findings and revised the final report. MD reviewed and commented on the manuscript.

JD contributed to the formal search strategies, carried out consistency checks on documents in screening and provided practice expertise and perspective. JD reviewed and commented on the manuscript.

CW was the principal investigator and developed the research project. Carolyn contributed to the development of the protocol and search strategy, carried out consistency checks on document screening and coding, developed and refined the programme theory and CMOCs and revised the final report. CW reviewed and commented on the manuscript.

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REFERENCES

1 Bickerdike L, Booth A, Wilson PM, et al. Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ open* 2017;7(4):e013384.

2 Pescheny JV, Gunn LH, Randhawa G, et al. The impact of the Luton social prescribing programme on energy expenditure: a quantitative before-and-after study. *BMJ open* 2019;9(6):e026862.

3 Jani A, Liyanage H, Hoang U, et al. Use and impact of social prescribing: a mixed-methods feasibility study protocol. *BMJ open* 2020;10(9):e037681.

4 Buck D, Ewband L. What is social prescribing? *The Kings Fund* 2020. https://www.kingsfund.org.uk/publications/social-prescribing [Accessed 31.08.2021]

5 Moffatt S, Steer M, Lawson S, et al. Link worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions. *BMJ open* 2017;7(7):e015203.

6 UK Government. Press release: £5 million for social prescribing to tackle the impact of COVID-19. 2020. https://www.gov.uk/government/news/5-million-for-social-prescribing-to-tackle-the-impact-of-covid-19 [Accessed 31.08.2021].

7 Husk K, Elston J, Gradinger F, et al. Social prescribing: where is the evidence?. *Br J Gen Pract* 2019;69(678):6-7.

8 Rempel ES, Wilson EN, Durrant H, et al. Preparing the prescription: a review of the aim and measurement of social referral programmes. *BMJ open* 2017;7(10):e017734.

9 Carnes D, Sohanpal R, Frostick C, et al. The impact of a social prescribing service on patients in primary care: a mixed methods evaluation. *BMC Health Serv Res* 2017;17(1):1-9.

10 NHS England. Social Prescribing, *as cited in* CordisBright, 2019, What works in social prescribing? https://www.cordisbright.co.uk/admin/resources/08-hsc-evidence-reviews-social-prescribing.pdf [Accessed 15.03.2019].

11 Rees S, Thomas S, Elliott M, et al. Creating community assets/social capital within the context of social prescribing. Findings from the workshop held 17/7/2019. http://www.wsspr.wales/resources/Rees%20et%20al%202019.pdf [Accessed 29.06.2021].

12 Social Prescribing Network. Report of the Annual Social Prescribing Network Conference. Report. 2016.

13 Tierney S, Wong G, Roberts N, et al. Supporting social prescribing in primary care by linking people to local assets: a realist review. *BMC Med* 2020;18(1):1-5.

14 Wallace C, Elliott M, Thomas S. Using consensus methods to develop a Social Prescribing Learning Needs Framework for practitioners in Wales. *Perspect Public Health* 2021;141(3):136-48.

15 Roberts T, Erwin C, Pontin D, et al. Social Prescribing and Complexity Theory: A Systematic Literature Review. *Executive summary.* http://www.wsspr.wales/resources/Roberts%20et%20al%20systematic%20review%20executive%20summary.pdf [Accessed 31.08.2021].

16 NHS England. The NHS Long Term Plan. 2019. https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf [Accessed 31.08.2021].

17 SNP. SNP Manifesto 2021. Scotland's Future. 2021. https://issuu.com/hinksbrandwise/docs/04_15_snp_manifesto_2021___a4_document?mode=window [Accessed 31.08.2021].

18 Welsh Government. Programme for Government. 2021. https://gov.wales/sites/default/files/publications/2021-06/programme-for-government-2021-to-2026.pdf [Accessed 31.08.2021].

19 Health and Social Care Board. Social prescribing. 2018. http://www.hscboard.hscni.net/social-prescribing/ [Accessed 29.06.2021].

20 Munoz SA, Terje A, Bailey H. Evaluating Social Prescribing. Report. 2020. https://www.iriss.org.uk/sites/default/files/2020-06/insights-55_0.pdf [Accessed 29.06.2021].

21 Wildman JM, Moffatt S, Steer M, et al. Service-users' perspectives of link worker social prescribing: a qualitative follow-up study. BMC Public Health 2019;19(1):1-2.

22 Woodhead C, Khondoker M, Lomas R. Impact of co-located welfare advice in healthcare settings: prospective quasi-experimental controlled study. *Br J Psychiatry* 2017;211(6):38895-95

23 Payne K, Walton E, Burton C. Steps to benefit from social prescription: a qualitative interview study. *Br J Gen Pract* 2020;70(690):e36-44.

24 Redmond M, Sumner RC, Crone DM, et al. 'Light in dark places': exploring qualitative data from a longitudinal study using creative arts as a form of social prescribing. *Arts health* 2019;11(3):232-45.

25 Loftus AM, McCauley F, McCarron MO. Impact of social prescribing on general practice workload and polypharmacy. *Public Health*. 2017;148:96-101.

26 Panagioti M, Reeves D, Meacock R, et al. Is telephone health coaching a useful population health strategy for supporting older people with multimorbidity? An evaluation of reach, effectiveness and cost-effectiveness using a 'trial within a cohort'. *BMC Med*. 2018;16(1):1-5.

27 Mercer SW, Fitzpatrick B, Grant L, et al. The Glasgow 'Deep End' Links Worker Study Protocol: a quasi-experimental evaluation of a social prescribing intervention for patients with complex needs in areas of high socioeconomic deprivation. *J Multimorbidity Comorbidity* 2017;7(1):1-10.

28 Pescheny JV, Randhawa G, Pappas Y. The impact of social prescribing services on service users: a systematic review of the evidence. *Eur J Public Health* 2020;30(4):664-73.

29 Wallace C, Stone J, Beeckman L, et al. All Wales Social Prescribing Research Network. What does good look like? Setting its outcome principles and Framework for Wales. Consultation Report. 2018.

30 Evans D. Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions. *J Clin Nurs* 2003;12(1):77-84.

31 Woodall J, Trigwell J, Bunyan AM, et al. Understanding the effectiveness and mechanisms of a social prescribing service: a mixed method analysis. *BMC Health Serv Res* 2018;*18*(1):1-12.

32 Wong G, Greenhalgh T, Westhorp G, et al. RAMESES publication standards: realist syntheses. *BMC Med* 2013;11(1):1-4.

33 Pawson R, Tilley N. Realistic evaluation. SAGE; 1997.

34 Dalkin SM, Greenhalgh J, Jones D, et al. What's in a mechanism? Development of a key concept in realist evaluation. *Implement Sci* 2015;10(1):1-7.

35 Pawson R, Greenhalgh T, Harvey G. et al. Realist review-a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy* 2005;10(1):21-34.

36 Pawson R. Digging for nuggets: how 'bad' research can yield 'good' evidence. *Int J Soc Res Methodol* 2006;9(2):127-142.

37 Hawkins AJ. Realist evaluation and randomised controlled trials for testing program theory in complex social systems. *Evaluation* 2016;22(3):270-285.

38 Bunn F, Goodman C, Jones PR, et al. Managing diabetes in people with dementia: a realist review. *Health Technol Assess* 2017;21(75).

39 Jagosh J, Macaulay AC, Pluye P, et al. Uncovering the benefits of participatory research: implications of a realist review for health research and practice. *Milbank Q* 2012;*90*(2):311-346.

40 Astbury B, Leeuw F. Unpacking Black Boxes: Mechanisms and Theory Building in Evaluation. *Am J Eval* 2010;31(3):363-81.

41 Papoutsi C, Mattick K, Pearson M, et al. Interventions to improve antimicrobial prescribing of doctors in training (IMPACT): a realist review. *Health Serv Deliv Res* 2018;6(10)

42 Wong G, Westhorpe G, Pawson R, et al.. Realist Synthesis. RAMESES Training Materials. 2013. https://www.ramesesproject.org/media/Realist_reviews_training_materials.pdf [Accessed 30.06.2021].

43 Pawson R. The science of evaluation: A Realist manifesto. SAGE; 2013.

44 Husk K, Blockley K, Lovell R, et al. What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. *Syst Rev* 2016;5:93.

45 Britten N, Jones R, Murphy M, et al. Qualitative research methods in general practice and primary care. *Fam Pract* 1995;12:104-114

46 Wong G, Greenhalgh T, Pawson R. Internet-based medical education: a realist review of what works, for whom and in what circumstances. *BMC Med Educ* 2010;10(1):1-10.

47 Wales School for Social Prescribing Research website. 2021. http://www.wsspr.wales/ [Accessed 31.08.2021].

48 Ford JA, Wong G, Jones AP, et al. Access to primary care for socioeconomically disadvantaged older people in rural areas: a realist review. *BMJ open* 2016;*6*(5):e010652.

49 Davies F, Wood F, Bullock A, et al. Interventions to improve the self-management support health professionals provide for people with progressive neurological conditions: protocol for a realist synthesis. *BMJ open* 2017;*7*(3):e014575.

50 North R, Anderson P, Harris S, et al. Wet Age Related Macular Degeneration Services in the Community – pathfinder evaluation. Report. 2018.

51 Perez Nyssen O, Taylor SJC, Wong G, et al. Does therapeutic writing help people with long-term conditions? Systematic review, realist synthesis and economic considerations. *Health Technol Assess* 2016;20(27).

52 Pawson R. Digging for nuggets: how 'bad' research can yield 'good' evidence. *Int J Soc Res Methodol* 2006;*9*(2):127-142.

53 Age Connects Cardiff & the Vale. Ageing Well in the Vale of Glamorgan Senior Health Shop. End of Year Report 2016 to 2017. Report. 2017.

54 Age Connects Cardiff & the Vale. Hap End of Year Report – April 2016 to March 2017. Report. 2017.

55 Age Connects Cardiff & the Vale. Project summary. Report. 2017.

56 Jones C. Research summary: Evaluating the Health Precinct. Report. 2019.

57 Jones C, Lynch M. Spice Time Credits Social Prescribing Pilot Evaluation. Final Report. 2019.

58 Bertotti M, Frostick C, Hutt P, et al. A realist evaluation of social prescribing: an exploration into the context and mechanisms underpinning a pathway linking primary care with the voluntary sector. *Prim Health Care Res Dev* 2018;*19*(3):232-245.

59 Bird EL, Biddle MSY, Powell JE. General practice referral of 'at risk' populations to community leisure services: Applying the RE-AIM framework to evaluate the impact of a community-based physical activity programme for inactive adults with long-term conditions. *BMC Public Health* 2019;*19*(1):1-14.

60 Campbell J, Winder R, Richards SH, et al. Exploring the relationships between provision of welfare benefits advice and the health of elderly people: a longitudinal observational study and discussion of methodological issues. *Health Soc Care Community* 2007;*15*(5):454-463.

61 Chatterjee HJ, Camic PM, Lockyer B, et al. Non-clinical community interventions: a systematised review of social prescribing schemes. *Arts Health* 2018;*10*(2):97-123.

62 Cheetham M, Van der Graaf P, Khazaeli B, et al. "It was the whole picture" a mixed methods study of successful components in an integrated wellness service in North East England. *BMC Health Serv Res* 2018;*18*(1):1-10.

63 Craig GM, Booth H, Hall J, et al. Establishing a new service role in tuberculosis care: the tuberculosis link worker. *J Adv Nurs* 2008;*61*(4):413-424.

64 Crone DM, Sumner RC, Baker CM, et al. 'Artlift' arts-on-referral intervention in UK primary care: updated findings from an ongoing observational study. *Eur J Public Health* 2018;*28*(3):404-409.

65 Public Health Wales. Evaluation of the Cwm Taf Social Prescribing Initiative. Report. 2015.

66 Dayson C. Evaluating social innovations and their contribution to social value: the benefits of a 'blended value' approach. *Policy Polit* 2017;*45*(3):395-411.

67 Dayson C, Painter J, Bennett E. Social prescribing for patients of secondary mental health services: emotional, psychological and social well-being outcomes. *J Public Ment Health* 2020;19(4):271-279.

68 Elston J, Gradinger F, Asthana S, et al. Does a social prescribing 'holistic'link-worker for older people with complex, multimorbidity improve well-being and frailty and reduce health and social care use and costs? A 12-month before-and-after evaluation. *Prim Health Care Res Dev* 2019;20:e135.

69 Grayer J, Cape J, Orpwood L, et al. Facilitating access to voluntary and community services for patients with psychosocial problems: a before-after evaluation. *BMC Fam Pract* 2008;*9*(1):1-8.

70 Grow Cardiff. The Growing Project. A joint NHS/Neighbourhood Partnership project delivered by Grow Cardiff. Pilot Project Report June. Report. 2017.

71 Grow Cardiff, 2019. Evaluating the Grow Well project. Process map [internal].

72 Hanlon P, Gray CM, Chng NR et al. Does Self-Determination Theory help explain the impact of social prescribing? A qualitative analysis of patients' experiences of the Glasgow 'Deep-End' Community Links Worker Intervention. *Chronic illness* 2019;3:1742395319845427.

73 Hassan SM, Giebel C, Morasae EK. Social prescribing for people with mental health needs living in disadvantaged communities: the Life Rooms model. *BMC Health Serv Res* 2020;*20*(1):1-9.

74 Heijnders ML, Meijs JJ. 'Welzijn op Recept' (Social Prescribing): a helping hand in re-establishing social contacts–an explorative qualitative study. *Prim Health Care Res Dev* 2018;*19*(3):223-231.

75 Holding E, Thompson J, Foster A, et al. Connecting communities: A qualitative investigation of the challenges in delivering a national social prescribing service to reduce loneliness. *Health Soc Care Community* 2020;*28*(5):1535-1543.

76 Husk K, Blockley K, Lovell R, et al. What approaches to social prescribing work, for whom, and in what circumstances? A realist review. *Health Soc Care Community* 2020;*28*(2):309-324.

77 Irvine KN, Marselle MR, Melrose A, et al. Group outdoor health walks using activity trackers: measurement and implementation insight from a mixed methods feasibility study. *Int J Environ Res Public Health* 2020;*17*(7):2515.

78 Jarrett M, Thornicroft G, Forrester A, et al. Continuity of care for recently released prisoners with mental illness: a pilot randomised controlled trial testing the feasibility of a critical time intervention. *Epidemiol Psychiatr Sci* 2012;*21*(2):187-193.

79 Jensen A. Culture vitamins–An arts on prescription project in Denmark. *Perspect Public Health* 2019;*139*(3):131-136.

80 Jensen A, Bonde LO. The use of arts interventions for mental health and wellbeing in health settings. *Perspect public health* 2018;*138*(4):209-214.

81 Jensen A, Torrissen W. Aesthetic engagement as health and wellbeing promotion. *J Public Ment Health* 2019;18(4):240-247.

82 Kellezi B, Wakefield JR, Stevenson C, et al. The social cure of social prescribing: a mixed-methods study on the benefits of social connectedness on quality and effectiveness of care provision. *BMJ open* 2019;9(11):e033137.

83 Kilgarriff-Foster A, O'Cathain A. Exploring the components and impact of social prescribing. *J Public Ment Health*. 2015;14(3):127-134.

84 Kingstone T, Bartlam B, Burroughs H, et al. Can support workers from AgeUK deliver an intervention to support older people with anxiety and depression? A qualitative evaluation. *BMC Fam Pract* 2019;*20*(1):1-16.

85 Loftus AM, McCauley F, McCarron MO. Impact of social prescribing on general practice workload and polypharmacy. *Public Health* 2017;*148*:96-101.

86 Lloyd E, et al. Social impact of the Arfon Community Link project. Social Return on Investment (SROI) Forecast report June 2016-September 2018. Report. 2018.

87 Maughan DL, Patel A, Parveen T, et al. Primary-care-based social prescribing for mental health: an analysis of financial and environmental sustainability. *Prim Health Care Res Dev* 2016;*17*(2):114-121.

88 Maund PR, Irvine KN, Reeves J, et al. Wetlands for wellbeing: piloting a nature-based health intervention for the management of anxiety and depression. *Int J Environ Res Public Health* 2019;*16*(22):4413.

89 Milestone Tweed. Reducing breathlessness through group singing. Singing for Lung Health Impact Report. February 2018. Report. 2018.

90 Mon Community Link. Some case stories to date. Report. 2020.

91 Natural England. Good practice in social prescribing for mental health: the role of nature-based interventions. Natural England Commissioned Report NECR228. Full report. 2020.

92 Pescheny J, Randhawa G, Pappas Y. Patient uptake and adherence to social prescribing: a qualitative study. *BJGP open* 2019;2(3).

93 Pesut B, Duggleby W, Warner G, et al. Volunteer navigation partnerships: Piloting a compassionate community approach to early palliative care. *BMC Palliat Care* 2018;*17*(1):1-11.

94 Poulos RG, Marwood S, Harkin D, et al. Arts on prescription for community-dwelling older people with a range of health and wellness needs. *Health Soc Care Community* 2019;*27*(2):483-492.

95 Prior F, Coffey M, Robins A, et al. Long-Term health outcomes associated with an exercise referral scheme: an observational longitudinal follow-up study. *J Phys Act Health* 2019;*16*(4):288-293.

96 Public Health Wales. Research and Evaluation Highlights, 2018/19. Report. 2019.

97 Public Health Wales. Social Prescribing in Wales, Primary Care Hub, May 2018. Report. 2018.

98 Rainbow Centre Penley. Social Prescribing: A brief introduction. Report. 2019.

99 Rainbow Centre Penley. Wrexham's Model of Social Prescribing. Report. 2019.

100 Rainbow Centre Penley. July and August 2019 Newsletter brought to you by the Rainbow Centre (newsletter 5). Report. 2019.

101 Rhondda GP Cluster. Rhondda GP Cluster Wellbeing Coordinator Evaluation Report April – December 2017. Report. 2017.

102 Skivington K, Smith M, Chng NR, et al. Delivering a primary care-based social prescribing initiative: a qualitative study of the benefits and challenges. *Br J Gen Pract* 2018;*68*(672):487-e494.

103 Smith TO, Jimoh OF, Cross J, et al. Social prescribing programmes to prevent or delay frailty in community-dwelling older adults. *Geriatrics* 2019;*4*(4):65.

104 Social Prescribing Torfaen. Social prescribing in Torfaen: A partnership between North & South Torfaen Neighbourhood Care Networks, Our learning so far: October 2015 – March 2017. Report. 2017.

105 Social Prescribing Torfaen. Social prescribing in Torfaen 2017-2018. Report. 2018.

106 Social Value Cymru. Arfon Community Link: Community link social impact report 2018-2019. Report. 2019.

107 Stalker KO, Malloch M, Barry MA, et al. Local area co-ordination: strengthening support for people with learning disabilities in Scotland. *Br J Learn Disabil* 2008;*36*:215-219.

108 Stickley T, Eades M. Arts on prescription: a qualitative outcomes study. *Public Health* 2013;*127*(8):727-734.

109 Stickley T, Hui A. Social prescribing through arts on prescription in a UK city: Participants' perspectives (Part 1). *Public health* 2012;*126*(7):574-579.

110 Stickley T, Hui A. Social prescribing through arts on prescription in a UK city: Referrers' perspectives (part 2). *Public health* 2012;*126*(7):580-586.

111 Jones C, Lynch M. Grow Well social prescribing pilot evaluation. Final Report. 2020.

112 Thomson LJ, Lockyer B, Camic PM, et al. Effects of a museum-based social prescription intervention on quantitative measures of psychological wellbeing in older adults. *Perspect Public Health* 2018;*138*(1):28-38.

113 Todd C, Camic PM, Lockyer B, et al. Museum-based programs for socially isolated older adults: Understanding what works. *Health & place* 2017;*48*:47-55.

114 Van de Venter E, Buller AM. Arts on referral interventions: a mixed-methods study investigating factors associated with differential changes in mental well-being. *J Public Health* 2015;*37*(1):143-150.

115 Vogelpoel N, Jarrold K. Social prescription and the role of participatory arts programmes for older people with sensory impairments. *Int J Integr Care* 2014;22(2):39-50.

116 Warm Wales. Project Overview Healthy Homes Healthy People. Report. 2019.

117 Tempo Time Credits. Evaluation of impact Tempo Time Credits. Report. 2020.

118 Webb R, Thompson JES, Ruffino JS, et al. Evaluation of cardiovascular risk-lowering health benefits accruing from laboratory-based, community-based and exercise-referral exercise programmes. *BMJ open SEM* 2016;*2*(1):e000089.

119 Wellbeing 4 U. Social Prescribing Impact Report April 2016 – March 2018. Report. 2018.

120 Murphy S, Moore G, Raisanen L, et al. The evaluation of the National Exercise Referral Scheme in Wales. Welsh Assembly Government Social Research. Report. 2010.

121 Whitelaw S, Thirlwall C, Morrison A, et al. Developing and implementing a social prescribing initiative in primary care: insights into the possibility of normalisation and sustainability from a UK case study. *Prim health Care Res Dev* 2017;*18*(2):112-121.

122 Patton MQ. Utilization-focused evaluation. In *International handbook of educational evaluation*. Springer, Dordrecht; 2003.

123 Social Care Institute for Excellence. Social Prescribing. 2020. https://www.scie.org.uk/prevention/connecting/social-prescribing [Accessed 31.08.2021].

124 Brett JO, Staniszewska S, Mockford C, et al. A systematic review of the impact of patient and public involvement on service users, researchers and communities. *Patient* 2014;7(4):387-95.

125 NIHR Involve. National standards for public involvement. 2019. https://www.invo.org.uk/posttypepublication/national-standards-for-public-involvement/ [Accessed 22.10.2019].

126 Roberts T, Lloydwin C, Pontin D, et al. The role of social prescribers in wales: a consensus methods study. *Perspect Public Health*. 2021;1757913921990072.

127 Kane M, Trochim WM. Concept mapping for planning and evaluation. Sage Publications, Inc; 2007.

128 MacFarlane A, Galvin R, O'Sullivan M, et al. Participatory methods for research prioritization in primary care: an analysis of the World Café approach in Ireland and the USA. *Fam Pract*. 2017;34(3):278-84.

129 Cooksey D. A review of UK health research funding. HM Treasury; 2006.

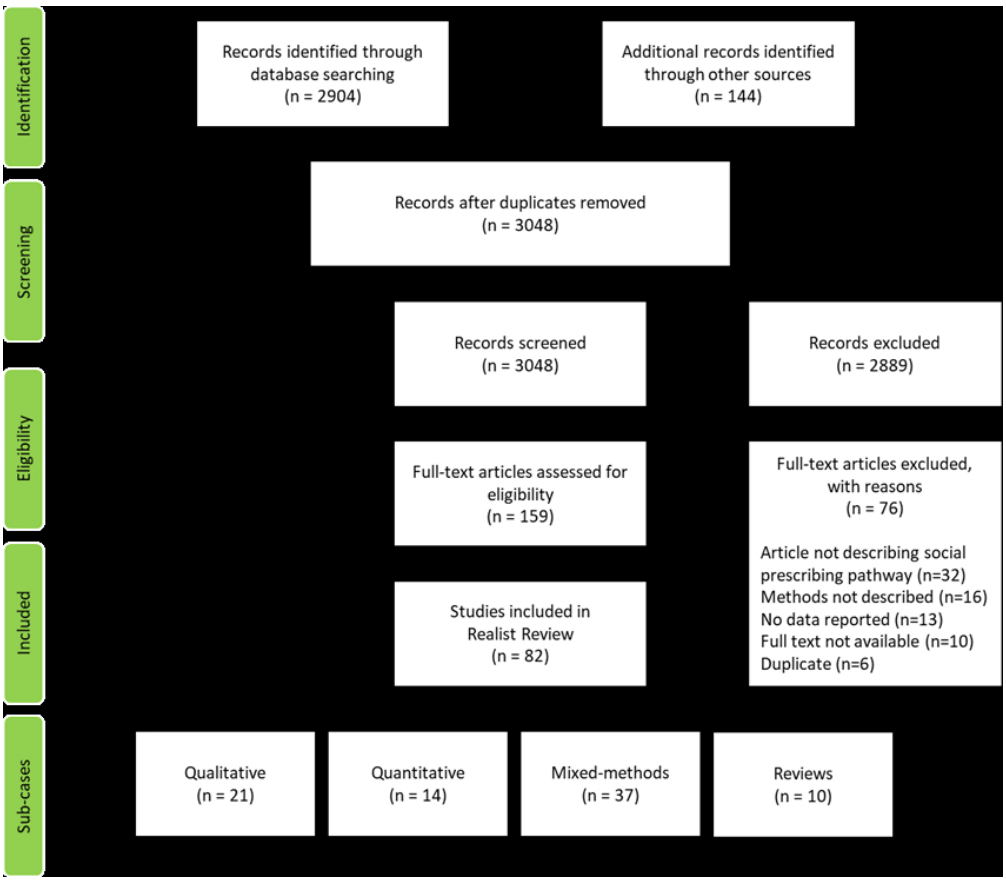

Figure 1. PRISMA diagram of document selection.

365x318mm (59 x 59 DPI)

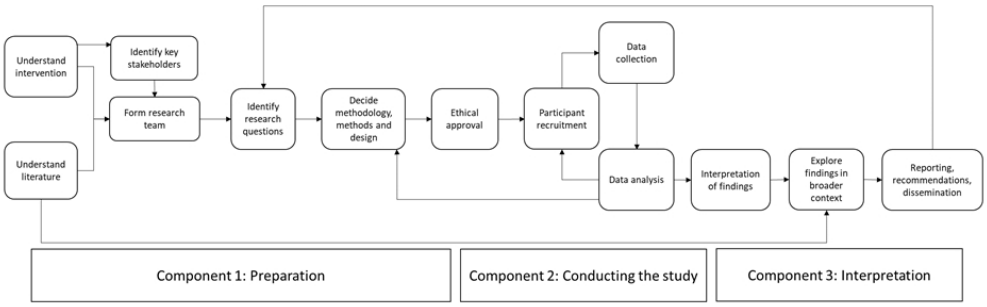

Figure 2. Initial programme theory for social prescribing evaluation

404x132mm (59 x 59 DPI)

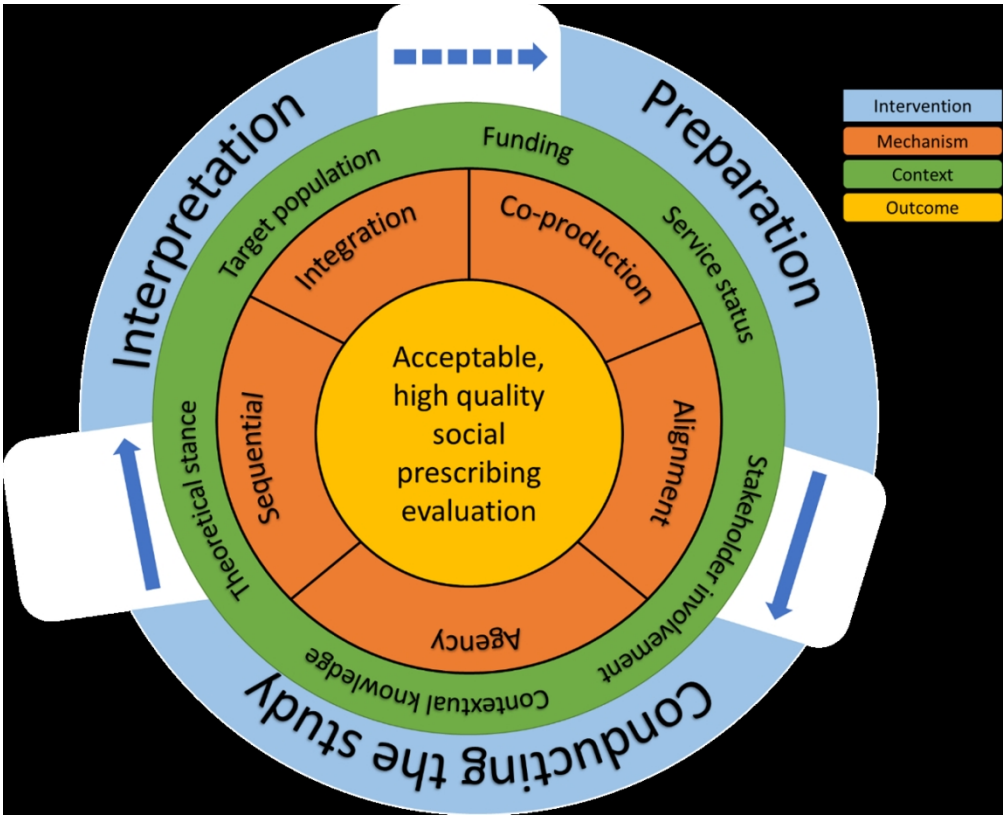

Figure 3. Refined programme theory for social prescribing evaluation

384x311mm (87 x 87 DPI)

What methods for evaluating social prescribing work, for which intervention types, for whom, and in what circumstances? A protocol for a realist review

Protocol contributors: Megan Elliott & Prof Carolyn Wallace

On behalf of the Wales School for Social Prescribing Research

Part of the ACCORD study

A social prescribing evaluation framework & reporting standard study

Date: 06.05.2020, Version: 1.2

Contents

1.0. Introduction

1.1. Background

Social prescribing is a multi-dimensional concept of prevention and intervention with the potential to support population health and well-being within the health and social care sector (Moffatt et al., 2017). At present, there is no agreed definition of social prescribing in the UK (Carnes et al., 2017). Whilst in England, social prescribing is defined as *"a means of enabling GPs and other frontline healthcare professionals to refer to 'services' in their community instead of offering medicalised solutions"* (NHS England, 2018), models of social prescribing in the other three devolved nations (Wales, Scotland & Northern Ireland) are broader. In Wales, there are multiple models of social prescribing based in either primary care or the community facilitated by County Voluntary Councils and other voluntary sector organisations (Rees et al., 2019). Roberts et al. (under review) define social prescribing as *"individuals being referred/self-referring to non-medical interventions run by a third-party organisation in order to contribute to their general health and well-being"*, but note the wide variety and complexity in the nature of social prescribing interventions. Most involve a referral to a link worker (also referred to as community connector, social prescriber, well-being co-ordinator), who has a 'what matters' conversation with the person, co-produces goals/plans, and refers them to third sector/community group interventions and professionals for support and activities. Recent peer-reviewed SP literature addresses social isolation/loneliness, cancer, social capital, music, farming, web-based interventions, exercise and the Arts (Carnes et al, 2017; Pilkington et al, 2017; Price et al, 2017). This extends beyond common/traditional reasons for SP referrals, i.e. physical and mental health, well-being, social isolation, lifestyle change, self-care, long-term conditions self-management, social welfare advice, financial advice, work, training and learning (Steadman et al, 2017).

Social prescribing interventions are complex (Tierney et al., 2020; Roberts et al., under review). These interventions involve multiple stakeholders, multiple referral pathways, large variability between programme structure, intervention type, staff responsibilities, a broad target patient group and a range of outcome variables. As such, evaluating social prescribing interventions is challenging and to date the literature supporting the efficacy of social prescribing is weak (Bickerdike et al., 2017; Roberts et al., under review). In addition, there are a number of gaps in the social prescribing evaluation literature which include the need to understand and develop;

- Comparisons between referral pathways, utility of models, 'transferring patients' (Husk et al, 2016), the process of SP,
- Data describing community intervention referral, contact and uptake (Carnes et al, 2017),
- Management information, baseline measures for evaluation, characteristics of people receiving SP versus non-engagers,
- The resources required within primary care to deliver SP (e.g. advocacy, employability),
- Funding mechanisms and impact of austerity measures and the Covid-19 pandemic on community assets (Dayson, 2017),
- Cross-sector communication within the SP process, translating research findings into implementation processes, combining individual satisfaction with both generic and specific context outcomes, reporting guidelines, standardisation of reporting evaluation (Cawston, 2011; Pilkington et al, 2017; Bickerdike et al, 2017).

Success and appropriateness of methodologies, methods and designs to evaluate social prescribing and address these gaps in the evidence likely depend on the context and circumstances within which they are employed. The Magenta Book (HM Treasury, 2020) highlights the importance of evaluation for commissioning, design, development and delivery of policies and interventions. According to the Magenta book, "*a good evaluation is useful, credible, robust, proportionate and tailored around the needs of various stakeholders*". Systematic reviews of the social prescribing literature have highlighted the lack of rigour and high risk of bias in social prescribing evaluations to date (Bickerdike et al., 2017; Roberts et al., under review). These reviews call for a coordinated framework for evaluating social prescribing interventions, in order to strengthen the evidence base and determine how social prescribing may have an impact upon people's health and well-being.

In response, researchers at the Wales School for Social Prescribing Research (WSSPR) have been commissioned by Health and Care Research Wales (HCRW) to develop a social prescribing evaluation methodology. More information about WSSPR can be found at www.wsspr.wales. WSSPR employs a translational research model (Cooksey et al., 2006; Weeks et al., 2013) to describe, order and organise the programme of research, by promoting equal and mutually supporting relationships between theory-building, knowledge acquisition and practice, without privileging any one activity. This is done through co-production between researchers, citizens and communities of practice and this co-productive approach will be taken throughout the development of the social prescribing evaluation methodology.

The first stage in this programme of research involves a review of the existing published and unpublished literature around social prescribing evaluation. Conclusions from the realist review will inform future stages of the programme of research, which will include using consensus methods to develop a social prescribing evaluation framework and virtual commissioning to test the framework in simulation and in practice.

A realist review approach was chosen as the most appropriate for a number of reasons;

1. *The complex nature of social prescribing:* The realist approach accepts complexity and seeks to explain the underlying mechanisms as to how a complex programme will work. In this context, the varied and complex nature of social prescribing means that different evaluation methodologies may be more appropriate and useful in certain circumstances and contexts, whilst other methodologies will be more appropriate in other circumstances and contexts. Understanding the mechanisms underpinning these relationships will support development of a framework that can be applied and adapted to a diverse range of social prescribing interventions and models.
2. *The scope of resources:* Realist reviews tend to be more inclusive than traditional systematic reviews and enable gathering and inclusion of a broader range of information sources (Husk et al., 2016). Realist reviews employ purposive search strategies, which seek to access information which will be relevant to the research questions but may not be identified through traditional search strategies of the published literature (Pawson et al., 2005). Due to the community-based nature of social prescribing, there will be a wealth of evaluation documentation and reports in the unpublished grey literature, which will be able to offer insight into good practice evaluation methodology and the considerations required when developing an evaluation methodology for use in social prescribing. Therefore, this review will gather data from searching the published

literature, the grey literature, and sharing a request for public documents and reports received from members of the Wales Social Prescribing Research Network.

3. *The realist approach to quality appraisal:* In contrast to systematic reviews which scrutinise methodological quality and risk of bias, realist reviews take a difference stance on judgment of research quality. (Pawson et al., 2005). The realist review rejects the hierarchical approach to assessing research quality, and instead believes that inclusion of a variety of methods is key to understanding the full picture. Therefore, the realist approach judges studies based on; (a) relevance to the research question and theory in question and (b) rigour of methodology to draw inferences from the data.

This realist review will explore evaluation methodology, methods and design that have been employed in the social prescribing published and unpublished literature to date. A realist review seeks to explore the mechanisms through which certain outcomes may occur as a result of particular contexts and circumstances (Pawson et al., 2005). The realist approach is underpinned by a generative model of causality, it proposes that in order to understand an outcome, the underlying mechanism and the context within which the outcome has occurred must be understood. This is defined in the form of a context (C), mechanism (M) and outcome (O) relationship; a CMO configuration.

In the context of the present review, the realist approach will enable researchers to explore why different methods of evaluating social prescribing interventions do (or do not) work, in certain circumstances (i.e. intervention types) for certain populations (e.g. people taking part in intervention (age, condition, etc.) or people conducting the evaluation (academics, management, prescribers)).

1.2. Review Objectives

Objective 1: To understand the different contexts within which social prescribing evaluations occur, including the settings in which social prescribing occurs (e.g. primary care, third sector, local authority), the elements of social prescribing (e.g. referral, link worker, community assets) and participant demographics (e.g. health status, age).

Objective 2: To explain the mechanisms underpinning why certain designs, methodologies & methods work or do not work for certain circumstances.

Objective 3: To explain which stakeholders are affected by different designs, methods and methodologies.

Objective 4: To explain the impact of these different designs, methods and methodologies on social prescribing evaluation.

Objective 5: To understand the programme theory by which these designs, methods & methodologies work or do not work for social prescribing evaluation.

Objective 6: To identify principles for good practice in social prescribing evaluation design, method & methodology.

1.3. Research Questions

1. When do the differing social prescribing evaluations occur? [different stages, different types, demographics, nature of the context]
2. Why do certain evaluation designs, methods & methodologies work or not work for different social prescribing evaluation?
3. For whom (evaluators, commissioners, recipients) do the different designs, methods and methodologies used for social prescribing work?
4. To what extent do the designs, methods and methodologies used for social prescribing evaluation work?
5. How do these designs, methods & methodologies work or not work for social prescribing evaluation?

1.4. Purpose of the review

The purpose of this realist synthesis is to identify principles of good practice in social prescribing review and evaluation. Future research will then consider the extent to which these principles have been followed and published and consider how rigour and existing methods could be improved. Using consensus methods, researchers will work with stakeholders (third sector, primary care, local authority, policy makers, statutory organisations, academics) to develop a framework for social prescribing evaluation. This will be disseminated in research and practice for use in social prescribing evaluation to improve evaluation rigour, thus strengthening the evidence base around social prescribing.

2.0. Methods & Analysis

2.1. Chosen methodology

A realist review takes an iterative and multi-stage approach to searching the literature. Pawson (2006) specified five steps to a realist review, which should be undertaken in an iterative, non-linear manner. This approach will be supplemented with additional approaches to provide more detail and depth around the search strategy, data extraction, analysis and synthesis (Pawson et al., 2005; Ford et al., 2016; Husk et al., 2016; Davies et al., 2017; North et al., 2018; Tierney et al., 2020).

These steps will be followed in the present review:

1. *Identify the review questions (Section 1.3):* Five research questions framed in realist terms to identify when, why, for whom, to what extent and how designs, methods and methodologies work for social prescribing evaluation.
2. *Searching for primary studies (Section 2.2):* Employing a four-phase iterative approach *(Pawson et al., 2005):*
    a. *Background search:* An initial scoping search to identify sources of evaluation and resources, identify key search terms and search strategies employed in published systematic and realist reviews of the same topic area.
    b. *Progressive focusing to identify programme theories:* Explore the background literature to identify initial programme theories and determine the scope of the review.
    c. *A search for empirical evidence to test a subset of these theories:* Engaging a variety of search strategies, including database searching, searching grey literature, backward and forward citation searching, requesting materials from the Wales Social Prescribing Research Network, to gather the database of resources to be included in the review.
    d. *A final search once the synthesis is almost complete:* Identify additional studies based on CMO configurations and programme theories developed from original analysis.
3. *Study selection (Section 2.3)*: Using an abstract screening tool a multi-stage, multi-reviewer (Husk et al., 2016; Tierney et al., 2020) study selection phase will take place to determine the final selection of documents to be included in the review.
4. *Quality appraisal (Section 2.5)*: Establish the relevance to the research question and theory and the rigour of the methodology to draw inferences from the data.
5. *Extracting the data (Section 2.6):* Extract data using NVivo to code data according to four questions set out by Ford et al. (2016).
6. *Synthesis (Section 2.7):* Search for causal inferences and programme theories from CMO configurations and themes, guided by an approach used by North et al. (2018).

2.2. Search strategy

2.2.1. Databases

A range of sources will be searched to access a breadth of evaluation reports and materials:

Literature type	Search method
Published literature (international)	ASSIA, CINAHL, Embase, Medline, PsycInfo, PubMed, Scopus Online, Social Care Online, Web of Science
Grey literature (Wales only)	Local authority websites, third sector websites, NHS websites, Primary Care One, CVCs, WCVA, university websites, 'OpenGrey'

Call for materials (Wales only)	Request materials (See Appendix A) from the Wales Social Prescribing Research Networks to include; materials they are using, reports, etc. Requests to contacts in the Wales School for Social Prescribing Research for contacts/resources. Request to WSSPR steering group to identify key evaluations to be included.

2.2.2. Search terms

Search term	Alternatives
Social prescribing	• Social prescriber, social prescription, social capital, social referral • Link worker, link navigator, link coordinator, link co-ordinator • Community connect*, community refer*, community coordinator, community co-ordinator, community navigator, community champion* • First contact practitioner • Parish organiser • Local area co-ordinator, local area coordinator
Community	Community asset, primary care, third sector, charity, public health, community group, social enterprise, local asset, housing, housing association, housing sector, social business*, social value organisation, voluntary sector, projects, arts, outdoor, dance, green, woodland, welfare, activ*, social capital, community benefit, social benefit, community resilience
Evaluation	Monitor*, review*, evaluat*, outcome*, impact, implication, evidence, cost, analysis, process, cost-effective, cost consequence, social value, investment, cost-benefit analysis, indicator, return on investment, tool, scale, quality indicator, effect*

2.2.3. Study inclusion criteria

The review will include evaluation of any component of the social prescribing pathway, i.e. the referral, the link worker process, engagement with the community assets or third sector. The evaluation does not need to describe the entire social prescription process in order to be included, however it must be clear that the intervention is linked to a social prescribing pathway (e.g. referrals must be received from a social prescriber).

Component	Inclusion	Exclusion
Intervention	Clear link to the social prescribing pathway. A community asset must have received referrals from a link worker*. Intervention includes primary care, third sector and private sector organisations.	Evaluations which do not mention the "link worker*" process Community asset independent of social prescribing.

Referrer	Primary care setting Community healthcare provider Third sector Self-referral	Self-referral direct to a community asset without link worker.
Participant group	Participants age 18 years. Any physical or mental health condition.	People under age 18 years.
Design	All evaluation & monitoring designs. Process, implementation & outcome evaluations.	Studies where evaluation/monitoring design is not described or defined in sufficient detail. Studies which do not involve an evaluation of a social prescribing intervention.
Document	Peer-reviewed articles Grey literature PhD, MPhil & MRes reports Unpublished evaluation reports Organisational reports Posters Case studies Indicators Terms of Reference Operating procedures Guidelines Systematic reviews Realist reviews	Editorials, opinion articles, communications, protocols Scoping review, literature review
Outcomes	Individual level Organisation level System level	
Location & language	Published literature – international Grey literature - Wales only English & Welsh language only.	
Date	Papers published 1 January 1998 (start of devolution) to 31 May 2020	

2.3. Study selection

In the first instance, titles will be screened by reviewer 1 (ME) for basic relevance and any titles deemed irrelevant will be excluded at this stage. An abstract screening tool developed by the researchers will be used to screen all remaining abstracts to determine whether they meet the inclusion criteria (see Appendix B). The abstract screening tool will be pilot tested by two reviewers prior to use. Where it is unclear (abstract classified as 'amber') whether the document meets the inclusion criteria from the abstract, the full text will be screened.

Characteristics of documents which were reviewed will be recorded in an Excel file. A random sample of 10% of the citations will also be reviewed by a second reviewer to establish consistency in application of the inclusion and exclusion criteria (Tierney et al., 2020).

Two reviewers will review all remaining full text documents to establish the final dataset of documents (Husk et al., 2016). Full-text documents will be stored and coded using NVivo 11. Any disagreements will be resolved through discussion with the review expert advisory group.

2.4. Data management

Exported files from database searching will be imported to EndNote reference manager and combined with search results from the grey literature and data collected from the request to the network. Files will be reviewed and duplicates will be removed. Quality appraisal forms (section 2.5) will be attached to the references on EndNote. Articles will be numbered and article numbers will be used to identify CMO origins.

PRISMA guidelines will be used to record searches.

A reflective diary will be kept by both reviewers to note reasons for inclusions/exclusions and queries to discuss with other reviewers.

Following study selection, the final set of materials will be uploaded to NVivo 11 software for analysis. The review team will use NVivo 11 to note take and annotate the documents.

Data will be labelled according to the source, for transparency for the review team and later publication (Davies et al., 2017):

- First order – data extracted directly from participant statements
- Second order – data extracted from the study authors' interpretation
- Third order – the reviewers interpretations of participant and author statements

2.5. Quality assessment

As per realist review guidelines, documents will be appraised based on relevance to the research questions and programme theories, and an assessment of rigour and the potential of bias. In this review, a realist synthesis appraisal form (Appendix C) will be used to appraise each full text paper. The appraisal tool will be pilot tested by two reviewers prior to use. This tool will also be used to initially extract key elements from the document which can specifically address research questions.

Appraisal of studies will be undertaken independently by two reviewers, with disagreements resolved through consultation with the advisory group.

2.6. Data Extraction

Data will be coded both inductively, in which codes originate from the review documents, and deductively, in which codes originate from theories, based on emerging concepts. This coding will be done iteratively. Ford et al (2016) recommend coding based on a series of questions:

1. Is the extracted data referring to a context, mechanism or outcome?
2. What is the partial or complete CMO configuration (CMOC) from this data?

3. How does this CMOC relate to social prescribing evaluation?
    a. Are there data in the document which support how the CMOC relates to social prescribing evaluation?
    b. In light of the CMOC and supporting data, does the programme theory for social prescribing evaluation need to be changed/amended?
4. Is the evidence sufficiently trustworthy and rigorous to change the CMOC or programme theory?

Extracted data will likely relate to details of intervention, details of evaluation methods, methodology and design employed, details of participants, setting/provider, outcomes, evaluator.

2.7. Data synthesis

Synthesis refers to the process of seeking explanation (Pawson et al., 2005). The data synthesis process aims to refine the programme theory by determining what works, for whom, in what circumstances, to what extent and why (Rycroft-Malone et al., 2012). The data synthesis approach for this review will follow the process set out by North et al. (2018) which was guided by the Wong & Papoutsi (2016) and Miles and Huberman (2014) approach. Following data extraction and quality appraisal, three reviewers (R1, R2 and R3) will be involved in a data synthesis process:

Based on the documents that are identified, documents will be divided into sub-groups for the first stage of the synthesis. The nature of these sub-groups will be determined by the content of the documents, e.g. sub-groups may refer to different stages of the social prescribing pathway, different evaluation processes or different social prescribing themes. All reviewers will be involved in agreeing the nature of document sub-groups.

Data synthesis will continue within each of these sub-groups. This will involve R1 identifying common themes throughout the documents in the sub-group and building CMOCs within these themes. R2 will double code 20% of the data to identify possible CMOCs. R1 and R2 will discuss and agree codes, with the support of R3 where there are disagreements in coding. From the constructed CMOCs, if-then statements will be created by R1 and R2 together, in relation to the research questions specified for the review. Inferences will then be drawn about the programme theory.

Data and inferences drawn within each of the sub-groups will then be integrated and triangulated. A final set of CMOCs and 'if-then' statements will be collated and meta-inferences will be drawn out by the three reviewers. Origin of CMOC will be identified, and the quality of the sources to support the CMOCs will be examined (i.e. did they originate in peer-reviewed documentation, was the design deemed rigorous?). The conclusions at this stage will be presented to the Expert Advisory Group (Section 3.0) for their comment.

At the end of this synthesis process, principles of good practice in evaluating social prescribing will be identified for academics and practitioners, within the context of the five research questions. Recommendations for social prescribing evaluation and implementation will be shared and recommendations for future research will then be highlighted.

The process of this synthesis may be modified and amended throughout the review process, any modifications will be discussed in the final report and publication.

The findings and draft conclusions from the realist review will be shared with the Wales School for Social Prescribing Research, including the steering group, international advisory board, network and

Communities of Practice for consultation. This will help determine the next steps for developing the evaluation methodology framework for social prescribing.

3.0. Protocol development

The protocol for this realist review was shared with members of the Wales School for Social Prescribing Research (WSSPR) steering group and the Expert Advisory group convened for this group (see below). Comments were received via e-mail and during the WSSPR May 2020 steering group. Amendments to the protocol were made accordingly. The WSSPR steering group will continue to receive updates and be involved with the review process across the course of the review.

3.1 Public engagement

The protocol will be presented to the PRIME Centre Wales SUPER public & patient involvement group on 03.06.2020. The aim of this will be to engage with members of the public and understand their views and thoughts around the search, the protocol and the next steps going forward.

The PPI representative for WSSPR also reviewed the protocol in full and shared comments which were integrated into the protocol. He will also be part of the Expert Advisory Group and will guide theory building and interpretation of findings.

3.2 Expert Advisory Group

An expert advisory group will be convened to check approaches to the realist review, aid programme theory development, validate findings and suggest alternative sources of information. The group will meet virtually two times over the six-month duration of the realist review. The group may also be consulted via e-mail at additional points during the review. Experts in both the methodology (realist synthesis), the study area (social prescribing evaluation) and local Welsh social prescribing knowledge will be invited to participate.

Name	Organisation	Relevant expertise
Lyndsey Campbell-Williams	Medrwn Mon (CoP representative)	Social prescribing & evaluation in practice.
Julie Davies	Bridgend County Borough Council	Social prescribing & community interventions
Mair Edwards	Grwp Cynefin (CoP representative)	Social prescribing & evaluation in practice.
Megan Elliott	University of South Wales/ PRIME Centre Wales	Senior research assistant for the WSSPR; trained in Realist Synthesis methods.
David Humphreys	Birmingham University / Stort Valley & Villages Primary Care Network	Social prescribing; realist synthesis methods.
Prof Mark Llewellyn	University of South Wales/ WIHSC/PRIME Centre Wales	Evaluation methodology for social prescribing
Dr Mary Lynch	Bangor University/CHEME	Evaluation methodology for social prescribing; social return on investment
Dr Sally Rees	Wales Council for Voluntary Action	Third sector & social prescribing; realist review & evaluation methods

Dr Glynne Roberts	Betsi Cadwaladr University Health Board	Social prescribing engagement with practitioners through Community of Practice
Andrew Rogers	Bangor University	Community development, realist review & evaluation methods
Roger Seddon	PPI representative	Social prescribing from public perspective, third sector, community resilience
Sara Thomas	Public Health Wales	Social prescribing from public health perspective
Josep Vidal-Alaball	Gerència Territorial Catalunya Central| Institut Català de la Salut	International perspective on social prescribing, evaluation & reporting.
Prof Carolyn Wallace	University of South Wales/ PRIME Centre Wales	Director of WSSPR; trained in Realist Synthesis methods.

A terms of reference has been drafted for the advisory group (Appendix D). These will be agreed in the first meeting of the expert advisory group.

The focus of meeting 1 will be to develop the Initial programme theory. The focus of meeting 2 will be to review and comment on the findings.

4.0. Dissemination

The realist review protocol has been uploaded to PROSPERO, registration CRD42020183065.

A full report of the findings will be written up, to be shared with the expert advisory group, the Wales School for Social Prescribing Research Steering Group, the Wales School for Social Prescribing Research International Advisory Board and the Wales Social Prescribing Research Network & Communities of Practice.

Following consultation with these advisory groups, a final report will be produced. Findings will also be submitted for publication in an open access, peer-reviewed journal. Publication write up will follow the RAMESES publication guidelines (Wong et al., 2013).

Findings will also be presented at a research conference. A user-friendly summary of the findings will be prepared and disseminated through the Wales Social Prescribing Research Network. Findings will also be shared with the PRIME Centre Wales and Health and Care Research Wales networks.

The findings from this realist review will feed into the next steps of the project, which will involve using consensus methods to develop a social prescribing evaluation framework with stakeholders and develop reporting standards for social prescribing evaluations.

5.0. References

Bickerdike, L., Booth, A., Wilson, P.M., Farley, K. and Wright, K., 2017. Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ open*, *7*(4), p.e013384.

Carnes, D., Sohanpal, R., Frostick, C., Hull, S., Mathur, R., Netuveli, G., Tong, J., Hutt, P. and Bertotti, M., 2017. The impact of a social prescribing service on patients in primary care: a mixed methods evaluation. *BMC health services research*, *17*(835), p.1-9. DOI 10.1186/s12913-017-2778-y

Cawston, P., 2011. Social prescribing in very deprived areas. *Br J Gen Pract*, *61*(586), pp.350-350.

Cooksey D., 2006. A Review of UK Health Research Funding. HM Treasury, London.

Davies, F., Wood, F., Bullock, A., Wallace, C. and Edwards, A., 2017. Interventions to improve the self-management support health professionals provide for people with progressive neurological conditions: protocol for a realist synthesis. *BMJ open*, *7*(3), p.e014575.

Dayson, C., 2017. Social prescribing 'plus': a model of asset-based collaborative innovation?. *People, Place and Policy*, *11*(2), pp.90-104.

Ford, J.A., Wong, G., Jones, A.P. and Steel, N., 2016. Access to primary care for socioeconomically disadvantaged older people in rural areas: a realist review. *BMJ open*, *6*(5), p.e010652.

HM Treasury, March 2020. Magenta Book. Central Government Guidance on Evaluation. London: HM Treasury. Accessed from: https://www.gov.uk/government/publications/the-magenta-book on 29.04.2020.

Husk, K., Blockley, K., Lovell, R., Bethel, A., Bloomfield, D., Warber, S., Pearson, M., Lang, I., Byng, R., Garside, R., 2016. What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. Systematic Reviews 5:93.

Miles, M. & Huberman, A., 2014. Qualitative Data Analysis: A methods Sourcebook. 3rd Ed. Thousand Oaks. SAGE Publications.

Moffatt, S., Steer, M., Lawson, S., Penn, L. and O'Brien, N., 2017. Link Worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions. *BMJ open*, *7*(7), p.e015203.

North, R., Anderson, P., Harris, S., Kenkre, J., Wallace, S., Wallace, C. 2018. Wet Age Related Macular Degeneration Services in the Community – pathfinder evaluation. Report.

NHS England, 2018. Social Prescribing, *as cited in* CordisBright, 2019, What works in social prescribing? Accessed from https://www.cordisbright.co.uk/admin/resources/08-hsc-evidence-reviews-social-prescribing.pdf on 15.03.2019.

Pawson, R., 2006. Evidence-based policy: a realist perspective. Sage: London.

Pawson, R., Greenhalgh, T., Harvey, G. and Walshe, K., 2005. Realist review-a new method of systematic review designed for complex policy interventions. *Journal of health services research & policy*, *10*(1), pp.21-34.

Pilkington, K., Loef, M.,Polley, M., 2017. Searching for Real-World Effectiveness of Health Care Innovations: Scoping Study of Social Prescribing for Diabetes. J Med Internet Res;19(2):e20

Price, S., Hookway, A., King, S., 2017. Social prescribing evidence map: technical report. Public Health Wales Observatory. Primary & Community Care Development and Innovation Hub. Public Health Wales NHS Trust.

Rees, S., Thomas, S., Elliott, M., Wallace, C. 2019. Creating sustainable community assets/social capital within the context of social prescribing: Findings from the workshop held 17/07/19. Report.

Roberts, T., Erwin, C., Pontin, D., Williams, M., Wallace, C., under review. Social prescribing and complexity theory: A systematic review.

Steadman, K., Thomas, R., Donnaloja, V., 2017. Social Prescribing. A pathway to work? Work Foundation www.theworkfoundation.com.

The All Wales Social Prescribing Research Network (WSPRN): Wales Council For Voluntary Action, 2019. Accessed from: https://wcva.cymru/influencing/the-social-prescribing-research-network/ on 24.04.2020.

Tierney, S., Wong, G., Roberts, N., Boylan, A.M., Park, S., Abrams, R., Reeve, J., Williams, V. and Mahtani, K.R., 2020. Supporting social prescribing in primary care by linking people to local assets: a realist review. *BMC medicine*, *18*(1), pp.1-15.

Weeks KW, Sabin M, Pontin D, Woolley N (2013) Safety in numbers: An introduction to the nurse education in practice series. Nurse Education in Practice 13 (2013) e4ee10.

Wong, G. & Papoutsi, C. (2016). Data analysis process. Data analysis - realist evaluations. Nuffield Department of Primary Care Health Sciences. University of Oxford.

Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., Pawson., 2013. RAMESES publication standards: realist syntheses. *BMC Medicine; 11*(21).

6.0. Appendices

A: Request to members of the Wales Social Prescribing Research Network for public facing evaluation documents (to be shared in English & Welsh)

Dear all,

As you know, the Wales School for Social Prescribing Research (WSSPR) was launched on 1st April 2020. One of the aims of WSSPR is to develop an evaluation framework for social prescribing. Our first step to achieving this involves a literature review, to find out what social prescribing evaluations have been completed, how they were done, what is reported and how these findings are shared.

So, we need your help!

Please could you send any **public facing evaluation documents** from your social prescribing service or organisation to wsspr@southwales.ac.uk. These could include reports, leaflets, posters, presentations, publications, terms of reference, operating procedures or anything else that you think would be relevant.

We are going to combine the reports that you share with us with international literature, to review what is currently being done, and draw out best practice for social prescribing evaluation.

Please send these documents to wsspr@southwales.ac.uk by Friday 29th May 2020.

Many thanks in advance,

Megan Elliott

Senior Research Assistant for WSSPR

Annwyl bawb,

Fel y gwyddoch, lansiwyd Ysgol Ymchwil Rhagnodi Cymdeithasol Cymru (WSSPR) ar 1 Ebrill 2020. Un o nodau WSSPR yw datblygu fframwaith gwerthuso ar gyfer rhagnodi cymdeithasol. Mae ein cam cyntaf tuag at gyflawni hyn yn cynnwys adolygiad llenyddiaeth, i ddarganfod pa werthusiadau rhagnodi cymdeithasol sydd wedi'u cwblhau, sut y cawsant eu gwneud, yr hyn a adroddir a sut mae'r canfyddiadau hyn yn cael eu rhannu.

Felly, mae angen eich help arnom ni!

A allech chi anfon unrhyw ddogfennau gwerthuso sy'n wynebu'r cyhoedd o'ch gwasanaeth neu sefydliad rhagnodi cymdeithasol i wsspr@southwales.ac.uk. Gallai'r rhain gynnwys adroddiadau, taflenni, posteri, cyflwyniadau, cyhoeddiadau, cylch gorchwyl, gweithdrefnau gweithredu neu unrhyw beth arall a fyddai'n berthnasol yn eich barn chi.

Rydyn ni'n mynd i gyfuno'r adroddiadau rydych chi'n eu rhannu â ni gyda llenyddiaeth ryngwladol, i adolygu'r hyn sy'n cael ei wneud ar hyn o bryd, a llunio arfer gorau ar gyfer gwerthuso rhagnodi cymdeithasol.

Anfonwch y dogfennau hyn at wsspr@southwales.ac.uk erbyn dydd Gwener 29ain Mai 2020.

Diolch yn fawr ymlaen llaw,

Megan Elliott

Uwch Gynorthwyydd Ymchwil ar gyfer WSSPR

B: Abstract screening tool

Record number: _____

Reviewer: _____

Abstract Screening Tool

Title				
First author				
Year				
Source				
English/Welsh Language?	**Yes**		**No**	
Does the document specifically refer to a social prescribing pathway?	**Yes**		**No**	
Are participants over age 18 years?	**Yes**		**No**	
Are evaluation or monitoring design & methods described?	**Yes**		**No**	
Does the document report data (i.e. not opinion/protocols)?	**Yes**		**No**	
Can the document contribute to answering one of the research questions?	**Yes**		**No**	
Research design (circle):	**Systematic Review**	**RCT**	**Cohort**	**Case-control**
	Cross-sectional	**Case study**	**Other:**	
Research methodology:	**Quantitative**	**Qualitative**	**Mixed-method**	
Research methods:				
Further comments:				

Rating		
Green: *Include*	**Amber: *Read full text***	**Red: *Exclude***

C: Quality appraisal tool

Record number: _____

Reviewer: _____

Realist Review Appraisal Form

Title:		
First Author:	Year:	Project name (if any):
Companion Papers/Documents:		

Summary of paper (~3 bullet points): *What is this about? What kind of data source? Quant, Qual, Report, Blog, etc.*

Peer-reviewed literature	Grey literature – Government commissioned report	Grey literature – Local authority/ funder commissioned report	Grey literature – Public facing, not reviewed external to organisation	Unknown

Appraisal assessment: Usefulness and relevance of this study is:			
High	Moderate	Low	None
Papers that have high relevance – framing of research and research questions are highly matched to review questions, empirical findings are clearly described, rich description of process & context.	*Papers that have a moderately relevant framing to theories – report on different but related interventions, similar outcomes, describe middle-range theories, areas of interest, potential to populate CMOs.*	*Papers that met the inclusion criteria but little description of context and mechanism. Contains at least one idea or statement about the context, mechanisms or outcomes that can be used for refining theory & building CMOs.*	*Upon reading this paper the full-text paper does not correspond to the review questions, does not have any context that corresponds to programme theories or does not describe at all the context or mechanisms.*

What is interesting about this paper?
Relevance: *How relevant is this paper?* High | Moderate | Low | None *In what way is this document relevant to the candidate programme theories, if at all (include page, paragraph, line numbers)*
Rigour: *How rigorous is this paper?* High | Moderate | Low | None *What are the strengths and weaknesses of the article?*
Are there any connections between outcomes and processes (C + M = O) ? Are there any if-then statements? What are they? Please state 'NONE' if no evidence is identified.
Describe any unintended positive or negative outcomes and their potential mechanisms. Please state 'NONE' if no evidence is identified.
Describe the impact of these contexts, mechanisms and/or outcomes. Please state 'NONE' if no evidence is identified.
Type of social prescribing/social prescribing methods used (e.g. MI, coaching, what matters conversation).

Questions for the first author and research partners:
Citations identified as potentially appropriate for inclusion in the review:

D: Expert Advisory Group Terms of Reference

Name of group	Expert Advisory Group Realist review of social prescribing evaluation methodology
Summary of Role	Members of the Expert Advisory Group will bring their expertise in either social prescribing or realist reviews to guide and advise on the realist review entitled "What methods for evaluating social prescribing work, for which intervention types, for whom, and in what circumstances?"
Responsibilities	1. *To review, feedback and contribute to the development of the Realist Review, including commenting on CMO configurations, findings, conclusions and recommendations.* 2. *To act as a critical friend to the review team.*
Membership	Members to be confirmed
Meetings	The Expert Advisory Group will meet two times over the 6-month duration of the realist review. Further support may be requested via e-mail. Meeting duration will be 2 hours. Notice of the meeting will be circulated at least 2 weeks before. A draft agenda and corresponding documents will be circulated 1 week prior to the planned meeting.
Confidentiality	All documents are confidential and must not be shared or discussed with third parties unless specified.

Additional file 4: List of items required when reporting a realist synthesis (RAMESES checklist)

Reporting item		Description of item	Reported on page(s)
Title			
1		In the title, identify the document as a realist synthesis or review	Page 1
Abstract			
2		While acknowledging publication requirements and house style, abstracts should ideally contain brief details of: the study's background, review question or objectives; search strategy; methods of selection, appraisal, analysis and synthesis of sources; main results; and implications for practice	Page 2
Introduction			
3	**Rationale for review**	Explain why the review is needed and what it is likely to contribute to existing understanding of the topic area	Pages 4-6
4	**Objectives and focus of review**	State the objective(s) of the review and/or the review question(s). Define and provide a rationale for the focus of the review	Pages 6-7
Methods			
5	**Changes in the review process**	Any changes made to the review process that was initially planned should be briefly described and justified	Pages 6-7
6	**Rationale for using realist synthesis**	Explain why realist synthesis was considered the most appropriate method to use	Page 6
7	**Scoping the literature**	Describe and justify the initial process of exploratory scoping of the literature	Page 7
8	**Searching processes**	While considering specific requirements of the journal or other publication outlet, state and provide a rationale for how the iterative searching was done. Provide details on all of the sources accessed for information in the review. Where searching in electronic databases has taken place, the details should include, for example, name of database, search terms, dates of coverage and date last searched. If individuals familiar with the relevant literature and/or topic area were contacted, indicate how they were identified and selected	Pages 7-9, Supplementary materials 1 and 3
9	**Selection and appraisal of documents**	Explain how judgements were made about including and excluding data from documents, and justify these	Pages 8-9, Supplementary materials 1 and 3
10	**Data extraction**	Describe and explain which data or information were extracted from the included documents and justify this selection	Page 9

11	**Analysis and synthesis processes**	Describe the analysis and synthesis processes in detail. This section should include information on the constructs analysed and describe the analytic process	Page 9
Results			
12	**Document flow diagram**	Provide details on the number of documents assessed for eligibility and included in the review, with reasons for exclusion at each stage, as well as an indication of their source of origin (e.g. from searching databases, reference lists and so on). You may consider using the example templates (which are likely to need modification to suit the data) that are provided	Page 8, Figure 1
13	**Document characteristics**	Provide information on the characteristics of the documents included in the review	Pages 9-10, Supplementary file 2
14	**Main findings**	Present the key findings with a specific focus on theory building and testing	Pages 10-14
Discussion			
15	**Summary of findings**	Summarise the main findings, taking into account the reviews objective(s), research question(s), focus and intended audience(s)	Pages 14-17
16	**Strengths, limitations and future research directions**	Discuss both the strengths of the review and its limitations. These should include (but need not be restricted to) (a) consideration of all the steps in the review process and (b) comment on the overall strength of evidence supporting the explanatory insights which emerged The limitations identified may point to areas where further work is needed	Pages 17-18
17	**Comparison with existing literature**	Where applicable, compare and contrast the reviews findings with the existing literature (e.g. other reviews) on the same topic	Pages 14-17
18	**Conclusion and recommendations**	List the main implications of the findings and place these in the context of other relevant literature. If appropriate, offer recommendations for policy and practice	Pages 16-17 and 18-19
19	**Funding**	Provide details of funding source (if any) for the review, the role played by the funder (if any) and any conflicts of interests of the reviewers	Page 20

Additional file 1: Search strategy

DATABASES

Literature type	Search method
Published literature (international)	Medline, Embase, CINAHL, PsycInfo, ASSIA, Web of Science, Scopus Online, PubMed, Social Care Online
Grey literature (Wales only)	Local authority websites, third sector websites, NHS websites, Primary Care One, CVCs, WCVA, university websites, 'OpenGrey'
Call for materials (Wales only)	Request materials (See Appendix A) from the Wales Social Prescribing Research Networks to include; materials they are using, reports, etc. Requests to contacts in the Wales School for Social Prescribing Research for contacts/resources. Request to WSSPR steering group to identify key evaluations to be included.

SEARCH TERMS

Search term	Alternatives
Social prescribing	• Social prescriber, social prescription, social capital, social referral • Link worker, link navigator, link coordinator, link co-ordinator • Community connect*, community refer*, community coordinator, community co-ordinator, community navigator, community champion* • First contact practitioner • Parish organiser • Local area co-ordinator, local area coordinator
Community	Community asset, primary care, third sector, charity, public health, community group, social enterprise, local asset, housing, housing association, housing sector, social business*, social value organisation, voluntary sector, projects, arts, outdoor, dance, green, woodland, welfare, activ*, social capital, community benefit, social benefit, community resilience
Evaluation	Monitor*, review*, evaluat*, outcome*, impact, implication, evidence, cost, analysis, process, cost-effective, cost consequence, social value, investment, cost-benefit analysis, indicator, return on investment, tool, scale, quality indicator

SEARCH STRINGS

String 1 - "social prescribing" OR "social prescriber" OR "social prescription" OR "social referral" OR "link worker" OR "link navigator" OR "link coordinator" OR "link co-ordinator" OR "community connector" OR "community connection" OR "community referrer" OR "community referral" OR "community coordinator" OR "community co-ordinator" OR "community navigator" OR "community champion" OR "community champions" OR "first contact practitioner" OR "parish organiser" OR "local area co-ordinator" OR "local area coordinator"

String 2 – evaluat* OR monitor* OR review* OR outcome* OR impact OR implication OR evidence OR cost OR analysis OR process OR cost-effective OR "cost consequence" OR "social value" OR investment OR "cost-benefit analysis" OR indicator OR "return on investment" OR tool OR scale OR "quality indicator" OR effect*

String 3 – "Community asset" OR "primary care" OR "third sector" OR "charity" OR "public health" OR "community group" OR "social enterprise" OR "local asset" OR "housing" OR "housing association" OR "housing sector" OR "social business*" OR "social value organisation" OR "voluntary sector" "projects" OR "arts" OR "outdoor" OR "dance" OR "green" OR "woodland" OR "welfare" OR "activ*" OR "social capital" OR "community benefit" OR "social benefit" OR "community resilience"

String 3 (Ab) AND string 2 (Ab) AND String 1 (Full text)

INCLUSION CRITERIA

Component	Inclusion	Exclusion
Intervention	Clear link to the social prescribing pathway. A community asset must have received referrals from a link worker*. Intervention includes primary care, third sector and private sector organisations.	Evaluations which do not mention the "link worker*" process Community asset independent of social prescribing.
Referrer	Primary care setting Community healthcare provider Third sector Self-referral	Self-referral direct to a community asset without link worker.
Participant group	Participants age 18 years. Any physical or mental health condition.	People under age 18 years.
Design	All evaluation & monitoring designs. Process, implementation & outcome evaluations.	Studies where evaluation/monitoring design is not described or defined in sufficient detail. Studies which do not involve an evaluation of a social prescribing intervention.
Document	Peer-reviewed articles Grey literature PhD, MPhil & MRes reports Unpublished evaluation reports Organisational reports Posters Case studies Indicators Terms of Reference Operating procedures Guidelines	Editorials, opinion articles, communications, protocols
Outcomes	Individual level Organisation level System level	
Location & language	Published literature – international Grey literature - Wales only English & Welsh language only.	
Date	Papers published 1 January 1998 (start of devolution) to 31 May 2020	

Additional File 2: Descriptive characteristics of studies (n=82) included in the Realist Review

Author	Year	Country	Sub-case	Intervention type	Study method/design	Evaluators	Appraisal
Age Connect Cardiff & the Vale [53]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	Uncontrolled before-and-after design and qualitative survey feedback	In-house evaluation	Low
Age Connect Cardiff & the Vale [54]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	End of year reporting, monitoring data	In-house evaluation	Low
Age connect Cardiff & the Vale [55]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	Uncontrolled before-and-after design and qualitative survey feedback	In-house evaluation	Low
Bangor University [56]	2019	Wales	Mixed Methods (grey)	The Health Precint, referral via social prescribing	Uncontrolled before-and-after design, interviews with staff	Independent research team	Moderate
Jones, Lynch [57]	2019	Wales	Mixed Methods (grey)	Time Credits, time based community support	Uncontrolled before-and-after design, document analysis of patient notes, interviews, focus groups, reflective diaries	Independent research team	Low
Bertotti, Frostick, Hutt, Sohanpal, Carnes [58]	2018	England	Mixed Methods	Social prescribing with social prescribing coordinators	Realist evaluation including GP surveys, interviews with stakeholders and observations	Independent research team	High
Bickerdike, Booth, Wilson, Farley, Wright [1]	2017	England	Reviews	Social prescribing	Systematic review	Independent research team	Moderate
Bird, Biddle, Powell [59]	2019	England	Mixed Methods	CLICK into activity, community based physical activity	Mixed methods evaluation using RE-AIM framework with uncontrolled before-and-after design questionnaires, interviews and	Independent research team	Moderate

					programme-related documentation.		
Campbell, Winder, Richards, Hobart [60]	2007	England	Quantitative	Welfare advice services	Longitudinal postal survey	No description of research team	High
Carnes, Sohanpal, Frostick, Hull, Mathur, Netuveli, Tong, Hutt, Bertotti [9]	2017	England	Mixed Methods	Social prescribing pilot	Patient surveys with matched control groups, interviews with service users	Independent research team	High
Chatterjee, Camic, Lockyer, Thomson [61]	2018	England	Reviews	Social prescribing (non-clinical community interventions)	Systematic review	Independent research team	Moderate
Cheetham, Van der Graaf, Khazaeli, Gibson, Wiseman, Rushmer [62]	2018	England	Mixed Methods	Integrated wellness service	In-depth semi-structured interviews with service users, focus groups with service-users and non-service users and routine monitoring data	No description of research team	Moderate
Craig, Booth, Hall, Story, Hayward, Goodburn, Zumla [63]	2008	England	Mixed Methods	Tuberculosis link worker	Cohort process evaluation and interviews with service providers	Mixed research team, researchers became stakeholders in project	Low
Crone, Sumner, Baker, Loughren, Hughes, James [64]	2018	England	Quantitative	Arts on Prescription	Uncontrolled before-and-after design	No description of research team	Moderate
Cwm Taf UHB [65]	2015	Wales	Mixed Methods (grey)	Social prescribing for healthy lifestyles	Literature review, survey, semi-structured interviews	In-house evaluation	Low
Dayson [66]	2017	England	Mixed Methods	Social innovation pilot in the community	Service evaluation with uncontrolled before-and-after design and interviews with patients, carers, commissioners and providers	Independent research team	High

Dayson, Painter, Bennett [67]	2020	England	Qualitative	Holistic social prescribing with link worker	Qualitative case study with three nested case studies; semi-structured interviews with commissioners, providers and patients	No description of research team	Moderate
Elston, Gradinger, Asthana, Lilley-Woolnough, Wroe, Harman, Byng [68]	2019	England	Quantitative	Holistic well-being co-ordinator service	Uncontrolled before-and-after design	Mixed research team	High
Grayer, Cape, Orpwood, Leibowitz, Buszewicz [69]	2008	England	Quantitative	Graduate Primary Care Community Link scheme	Uncontrolled before-and-after design	Independent research team	Low
Grow Well [70]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Uncontrolled before-and-after design, feedback, case studies, monitoring data analysis	In-house evaluation	Low
Grow Well [71]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Uncontrolled before-and-after design, survey	Independent research team	Moderate
Hanlon, Gray, Chng, Mercer [72]	2019	Scotland	Qualitative	Links Worker Programme, social prescribing to target negative impacts of the social determinants of health	Semi-structured interviews with service users	Independent research team	Moderate
Hassan, Giebel, Khedmati Morasae, Rotheram, Mathieson, Ward, Reynolds, Price, Bristow, Kullu [73]	2020	England	Qualitative	Life Rooms, social prescribing to address the social determinants of mental health	Semi-structured focus groups with service users	Mixed research team including PPI	Moderate
Heijnders, Meijs [74]	2018	Netherlands	Qualitative	Holistic social prescribing with link worker	Semi-structured, in-depth interviews with service users	Mixed research team	Low

Holding, Thompson, Foster, Haywood [75]	2020	England	Qualitative	Social prescribing targetting loneliness with link workers	Semi-structured interviews with staff and volunteers	Independent research team	Moderate
Husk, Blockley, Lovell, Bethel, Lang, Byng, Garside [76]	2019	England	Reviews	Social prescribing	Realist review	Independent research team	Low
Irvine, Marselle, Melrose, Warber [77]	2020	Scotland	Mixed Methods	Nature-based intervention	Feasibility study, uncontrolled before-and-after design, interviews with service users	Mixed research team	Low
Jarrett, Thornicroft, Forrester, Harty, Senior, King, Huckle, Parrott, Dunn, Shaw [78]	2012	England	Quantitative	Critical Time Intervention to support mentally-ill prisoners post release (social, clinical, housing and welfare services)	Pilot Randomised Controlled Design	Mixed research team	Moderate
Jensen [79]	2019	Denmark	Qualitative	Arts on Prescription	Semi-structured interviews with service users	No description of research team	Low
Jensen, Bonde [80]	2018	Denmark	Reviews	Arts on Prescription	Literature review	Independent research team	Low
Jensen, Torrissen [81]	2019	Denmark	Qualitative	Arts on Prescription	Semi-structured interviews with service users	No description of research team	Low
Kellezi, Wakefield, Stevenson, McNamara, Mair, Bowe, Wilson, Halder [82]	2019	England	Mixed Methods	Social prescribing	Semi structured interviews and longitudinal survey	No description of research team	Moderate
Kilgarriff-Foster, O'Cathain [83]	2015	England	Reviews	Social prescribing	Literature review	Independent research team	Low
Kingstone, Bartlam, Burroghs, Bullock, Lovell, Ray, Bower, Waheed, Gilbody,	2019	England	Qualitative	Tailored social prescribing, behavioural activation	Semi-structured interviews with older people and support workers; interviews or focus groups with GPs	Mixed research team	High

Nicholls, Chew-Graham [84]							
Loftus, McCauley, McCarron [85]	2017	Northern Ireland	Quantitative	Social prescribing pathway	Uncontrolled before-and-after design	Mixed research team	Low
Mantell Gwynedd [86]	2018	Wales	Mixed Methods (grey)	Social prescribing, Community link service	Monitoring data analysis, interviews with service users	In-house evaluation	High
Maughan, Patel, Parveen, Braithwaite, Cook, Lillywhite, Cooke [87]	2015	England	Quantitative	CONNECT: social prescribing	Observational study	No description of research team	Low
Maund, Irvine, Reeves, Strong, Cromie, Dallimer, Davies [88]	2019	England	Mixed Methods	Wetlands for Wellbeing, Nature-based health intervention	Questionnaires, focus groups and semi-structured interviews for participants and healthcare professionals	No description of research team	Moderate
Mercer, Fitzpatrick, Grant, Chng, McConnachie, Bakshi, James-Rae, O'Donnell, Wyke [27]	2019	Scotland	Quantitative	Primary Care Community Links Practitioner	Quasi-experimental cluster-randomised controlled trial	No description of research team	High
Milestone tweed [89]	2018	Wales	Mixed Methods (grey)	Singing for Lung Health	Uncontrolled before-and-after design, interviews with staff	In-house evaluation	Low
Moffatt, Steer, Lawson, Penn, O'Brien [5]	2017	England	Qualitative	Ways to Wellness, Holistic social prescribing with link worker	Semi-structured interviews with service users	No description of research team	High
Mon Community Link [90]	2020	Wales	Qualitative (grey)	Social prescribing with link worker	Case studies	No description of research team	Low
Natural England [91]	2017	England	Review (grey)	Nature-based interventions	Evidence review	Mixed research team	Moderate
Panagioti, Reeves, Meacock, Parkinson, Lovell,	2018	England	Quantitative	Health coaching	Trials within Cohorts design	No description of research team	High

Hann, Howells, Blakemore, Riste, Coventry, Blakeman, Sidaway, Bower [26]							
Payne, Walton, Burton [23]	2020	England	Qualitative	Multi-activity social prescribing	Semi-structured interviews with service users	No description of research team	Moderate
Pescheny, Gunn, Randhawa, Pappas [2]	2019	England	Quantitative	Social prescribing with navigators	Uncontrolled before-and-after design	Mixed research team	Moderate
Pescheny, Randhawa, Pappas [92]	2018	England	Qualitative	Social prescribing with link worker	Semi-structured interviews with service users, navigators and GPs	Independent research team	Moderate
Pescheny, Randhawa, Pappas [28]	2020	England	Reviews	Social prescribing	Systematic review	Independent research team	High
Pesut, Duggleby, Warner, Fassbender, Antifeau, Hooper, Greig, Sullivan [93]	2018	Canada	Mixed Methods	N-CARE, nurse navigation in early palliative care	Pilot study using questionnaires and semi-structured interviews with service users	Mixed research team, including PPI	Moderate
Poulos, Marwood, Harkin, Opher, Clift, Cole, Rhee, Beilharz, Poulos [94]	2018	Australia	Mixed Methods	Arts on Prescription	Program evaluation including uncontrolled before-and-after design, focus groups and interviews	Mixed research team	High
Prior, Coffey, Robins, Cook [95]	2019	England	Quantitative	Exercise on referral	Uncontrolled before-and-after design	No description of research team	Low
Public Health Wales [96]	2019	Wales	Quantitative (grey)	Social prescribing with link worker	Uncontrolled before-and-after design	Mixed research team	Moderate
Public Health Wales [97]	2018	Wales	Review (grey)	Social prescribing in Wales	Evidence mapping	Mixed research team	Low
Rainbow Centre Penley [98]	2019	Wales	Mixed Methods (grey)	Social prescribing	Referral numbers and case study	In-house evaluation	Low

Rainbow Centre Penley [99]	2019	Wales	Mixed Methods (grey)	Social prescribing	Referral numbers and case study	In-house evaluation	Low
Rainbow Centre Penley [100]	2019	Wales	Mixed Methods (grey)	Social prescribing	Case studies, patient reported outcomes	In-house evaluation	Low
Redmond, Sumner, Crone, Hughes [24]	2019	England	Qualitative	Arts on Prescription	Qualitative survey of service users	Research team, involved with programme development and implementation	Low
Rempel, Wilson, Durrant, Barnett [8]	2017	England	Reviews	Social referral programmes	Systematic review	Independent research team	High
Rhondda GP cluster [101]	2017	Wales	Mixed Methods (grey)	Well-being co-ordinator service	Monitoring data analysis, testimonial, survey with service users, practice and providers	In-house evaluation	Moderate
Skivington, Smith, Chng, Mackenzie, Wyke, Mercer [102]	2018	Scotland	Qualitative	Links Worker Programme, social prescribing to target negative impacts of the social determinants of health	Semi-structured interviews with community organisation representatives and Community Links Practitioners [link workers]	No description of research team	Moderate
Smith, Jimoh, Cross, Allan, Corbett, Sadler, Khondoker, Whitty, Valderas, Fox [103]	2019	England	Reviews	Social prescribing for frail older adults	Systematic review	Independent research team	Low
Social prescribing Torfaen [104]	2017	Wales	Mixed Methods (grey)	Social prescribing	Monitoring data analysis, case studies	In-house evaluation	Low
Social prescribing Torfaen [105]	2018	Wales	Mixed Methods (grey)	Social prescribing	Monitoring data analysis, case studies	In-house evaluation	Low
Social Value Cymru [106]	2019	Wales	Mixed Methods (grey)	Social Prescribing via Community Link Officer	Monitoring data analysis	In-house evaluation	Moderate
Stalker, Malloch, Barry, Watson [107]	2008	Scotland	Mixed Methods	Local area coordination for people with learning disabilities	Case studies, postal questionnaire and semi-structured interviews	Independent research team	Moderate

					with co-ordinators and managers		
Stickley, Eades [108]	2013	England	Qualitative	Arts on Prescription	Semi-structured interviews with service users	Independent research team	Moderate
Stickley, Hui [109]	2012	England	Qualitative	Arts on Prescription	Narrative inquiry using in-depth interviews with service users	Mixed research team including PPI	Moderate
Stickley, Hui [110]	2012	England	Qualitative	Arts on Prescription	In-depth semi-structured interviews with referrers	Mixed research team including PPI	Moderate
The Growing Project [111]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Monitoring data analysis, interviews with service users	In-house evaluation	Low
Thomson, Lockyer, Camic, Chatterjee [112]	2018	England	Quantitative	Museum-based social prescription	Uncontrolled before-and-after design	No description of research team	Moderate
Todd, Camic, Lockyer, Thomson, Chatterjee [113]	2017	England	Qualitative	Museum-based social prescription	Semi-structured interviews and weekly diary entries from service users	No description of research team	Moderate
van de Venter, Buller [114]	2014	England	Mixed Methods	Arts on Prescription	Uncontrolled before-and-after design and interviews with service users	No description of research team	High
Vogelpoel, Jarrold [115]	2014	England	Mixed Methods	Arts on Prescription	Uncontrolled before-and-after design, interviews and dynamic observation proformas, case studies	Mixed research team	Moderate
Warm Wales [116]	2019	Wales	Mixed Methods (grey)	Warm Wales, tackling fuel poverty	Case study design	In-house evaluation	Low
We are tempo [117]	2020	Wales	Mixed Methods (grey)	Time Credits, time based community support	Impact evaluation, surveys and journey mapping	In-house evaluation	Moderate
Webb, Thompson, Ruffino, Davies, Watkeys, Hooper,	2016	Wales	Quantitative	National Exercise on Referral Scheme	Uncontrolled before-and-after design	No description of research team	Low

Jones, Walkters, Clayton, Thomas, Morris, Llewellyn, Ward, Wyatt-Williams, McDonnell [118]							
Wellbeing 4 U [119]	2018	Wales	Mixed Methods (grey)	Social prescribing, Well-being co-ordinators	Monitoring data analysis, survey, case studies	In-house evaluation	Moderate
Welsh Government [120]	2010	Wales	Mixed Methods (grey)	National Exercise on Referral Scheme	Randomised controlled trial design with nested process and economic evaluation	Independent research team	Moderate
Whitelaw, Thirlwall, Morrison, Osborne, Tattum, Walker [121]	2017	Scotland	Qualitative	Social prescribing in General Practice	Case study design using semi-structured interviews with steering group, wider primary care team and community groups	No description of research team	Moderate
Wildman, Moffatt, Steer, Laing, Penn, O'Brien [21]	2019	England	Qualitative	Ways to Wellness, Holistic social prescribing with link worker	Semi-structured interviews with service users	No description of research team	Moderate
Woodall, Trigwell, Bunyan, Raine, Eaton, Davis, Hancock, Cunningham, Wilkinson [31]	2018	England	Mixed Methods	Social prescribing with well-being co-ordinators	Uncontrolled before-and-after design and interviews with service users	No description of research team	High
Woodhead, Collins, Lomas, Raine [22]	2017	England	Qualitative	Welfare advice services	Realist semi-structured interviews with general practice staff, advice staff and service funders	Independent research team	Low

BMJ Open

Exploring how and why social prescribing evaluations work – A Realist Review

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2021-057009.R1
Article Type:	Original research
Date Submitted by the Author:	23-Feb-2022
Complete List of Authors:	Elliott, Megan; University of South Wales, Wales School for Social Prescribing Research, PRIME Centre Wales, Faculty of Life Sciences & Education Davies, Mark; University of South Wales Faculty of Life Sciences and Education, Welsh Institute for Health and Social Care Davies, Julie; Bridgend County Borough Council, Valleys Regional Park Wallace, Carolyn; University of South Wales, Wales School for Social Prescribing Research, PRIME Centre Wales, Faculty of Life Sciences and Education
Primary Subject Heading:	Public health
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Exploring how and why social prescribing evaluations work – A Realist Review

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Exploring how and why social prescribing evaluations work – A Realist Review

ABSTRACT

Objective*:* The evidence base for social prescribing is inconclusive, and evaluations have been criticised for lacking rigour. This Realist Review sought to understand how and why social prescribing evaluations work or do not work. Findings from this Review will contribute to the development of an evidence-based evaluation framework and reporting standards for social prescribing.

Design: A Realist Review.

Data sources*:* ASSIA, CINAHL, Embase, Medline, PsycInfo, PubMed, Scopus Online, Social Care Online, Web of Science and grey literature.

Eligibility criteria*:* Documents reporting on social prescribing evaluations using any methods, published between 1998 and 2020 were included. Documents not reporting findings or lacking detail on methods for data collection and outcomes were excluded.

Analysis*:* Included documents were segregated into sub-cases based on methodology. Data relating to context, mechanisms and outcomes and the programme theory were extracted and context-mechanism-outcome configurations were developed. Meta-inferences were drawn from all sub-cases to refine the programme theory.

Results*:* 83 documents contributed to analysis. Generally, studies lacked in-depth descriptions of the methods and evaluation processes employed. A cyclical process social prescribing evaluation was identified, involving preparation, conducting the study and interpretation. The analysis found that co-production, alignment, research agency, sequential mixed-methods design and integration of findings all contributed to the development of an acceptable, high quality social prescribing evaluation design. Context-Mechanism-Outcome Configurations relating to these themes are reported.

Conclusions*:* To develop the social prescribing evidence base and address gaps in our knowledge about the impact of social prescribing and how it works, evaluations must be high quality and acceptable to stakeholders. Development of an evaluation framework and reporting standards drawing on the findings of this Realist Review will support this aim.

Registration*:* PROSPERO registration CRD42020183065.

ARTICLE SUMMARY:

- This is the first realist review of evaluation methodology, specifically in relation to social prescribing evaluation.
- Applying a realist logic of enquiry allowed generation of a theory underpinning how and why social prescribing evaluations work.
- Inclusion of published and grey literature granted the reviewers insight into different contexts within which social prescribing evaluations take place.
- Descriptions of social prescribing evaluation methods and processes lacked detail of mechanisms, causality or decision-making processes, which would be useful to further refine the programme theory.
- This Realist Review sits within the broader ACCORD study to develop an evaluation framework and reporting standards, findings will be directly applied in practice.

INTRODUCTION

Attention on social prescribing is rapidly increasing. As a concept, its applications are broad, and it has been proposed as a solution to improve sustainability of general practice[1]; reduce health inequalities[2]; address the social determinants of health[3]; tackle loneliness and social isolation[4]; improve the health and well-being of citizens[5] and support recovery from COVID-19[6]. Given the breadth of its applications it is unsurprising that social prescribing services are highly heterogeneous, and the term is used to refer to a variety of models and activities[7]. Aims of social prescribing reported in the literature are wide-ranging, including improved mental, physical and social well-being, optimised health service use and reduced health service costs[8]. There is no agreed definition of social prescribing[9], but it is generally understood to involve referral to non-medical resources in the community, with the goal of improved health and well-being[10-12]. This typically involves a link worker, also known as a community connector or navigator, who works with the individual to identify their needs, co-produce goals and connect them to resources in their community[13-15].

In parts of the United Kingdom, the growing interest in social prescribing has been accompanied by substantial funding. The NHS Long Term Plan for England committed to placing 1,000 social prescribing link workers in primary care networks by 2020/21, benefitting 2.5 million people by 2023/24, through 900,000 referrals[16]. A further £5 million of funding for social prescribing has since been granted to support COVID-19 recovery[6]. Social prescribing in the other devolved nations has not received the same NHS funding, although the Welsh and Scottish Governments have committed to developing a social prescribing offer[17,18]. As such, their social prescribing models have been developed using a bottom-up approach within the community, where services and activities are predominantly designed and implemented by individual third sector organisations, without an overarching, national strategic model[11,19,20].

Diverse social prescribing models and services have been evaluated using heterogeneous designs and methods. The application of these varying designs and methods has resulted in an inconsistent, inconclusive evidence base for social prescribing[1,15]. Evaluations using qualitative and uncontrolled quantitative designs have reported improvements in health, well-being, social isolation, and chronic health conditions[5,21-24]. However, these findings have not been corroborated with studies employing controlled designs[25-28]. Discrepancies in the evidence base have also been identified in mixed-methods studies[9] and systematic reviews[29]. Gaps in our understanding of the individual, community and system impact of social prescribing and the mechanisms through which social prescribing works, for whom

and in what circumstances remain[7,30]. Randomised controlled trials are considered the gold standard for generating evidence[31], however their application in the context of social prescribing evaluation is contentious given the moral and ethical implications of denying access to services which may improve health and well-being[32]. Instead, a co-ordinated, consistent framework for evaluation is required to produce comparable results which contribute to the social prescribing evidence base[1].

To develop such a framework, we argue that it is important to understand the social prescribing evaluation literature to date. The present Realist Review seeks to provide insight into how and why social prescribing evaluations work, and identify good practice, and areas for improvement. By providing an understanding of the current state-of-play in social prescribing evaluation, it will inform the development of an evidence-based evaluation framework.

Realist Review

A Realist logic of enquiry, based on Realist philosophy of science, is a theory-driven approach which seeks to explore the interaction between context, mechanism, and outcome[33]. It asks the question, *what works, for whom and in what context*[34], going beyond attempts to understand whether something works, to identify mechanisms through which certain outcomes are generated, when triggered by a given context[35]. A Realist Review, also known as a Realist Synthesis, applies the Realist logic of enquiry to the secondary analysis and synthesis of primary research studies[36,37]. A table with definitions of terminology used in this Realist Review can be found in Table 1.

Table 1. Realist glossary of terms

Term	**Definition**
Realist Theory	A theory which makes reference to the underlying generative mechanisms that exist in the domain of the real[38].
Realist Review	The process of evidence review that follows the Realist approach[39].
Context	Any condition that triggers and/or modifies the behaviour of a mechanism[40].
Mechanism	Underlying entities, processes, or structures which operate in particular contexts to generate outcomes of interest. Mechanisms are causal, hidden, context sensitive and generate outcomes[41].

Outcome	The impact resulting from an interaction between mechanisms and contexts[42]. Intended or unintended outcomes triggered by a mechanism within a given context. These may be proximal (immediate) or distal (future).
Programme Theory	The ideas and assumptions underlying how, why and in what circumstances complex social interventions work[35]. An abstracted description and/or diagram that lays out what a programme/family of programmes comprises and how it is expected to work[43]. Programme theory explains the sequence of implementation of an intervention and provides theories of change to explain how outcomes are generated by mechanisms. It is thus a theory of causation and implementation.
Context-Mechanism-Outcome Configuration (CMOC)	A statement that describes the relationship between context, mechanism and outcome, such that a context triggers a mechanism, which then produces an outcome[40].

Framed as a new model for systematic review[37], the Realist approach to synthesis has several benefits which make it an appropriate choice to explore the topic of social prescribing evaluation. The Realist approach accepts complexity and provides a technique to understand complex interventions[44]. Social prescribing is complex[13], as is its evaluation, given the use of many different approaches in different contexts. Previous systematic reviews of social prescribing evaluations have provided descriptions and critiques of the evidence base and evaluation approaches used[1,15,29], but have not gone into depth about how and why they work, or do not work. Of particular significance and benefit to the present Review, is the breadth of document types and resources that can be drawn on in a Realist Review[36,45]. Realist Reviews reject the hierarchical approach for assessing research quality[36] and accept a breadth of methodologies and approaches. Due to the community-based nature of social prescribing, and the aim of the Review to understand the various contexts within which social prescribing evaluation occur, it was important to not limit included documents to the published literature.

METHODS

The present Realist Review was conducted between April 2020 and June 2021. The Review protocol was registered with PROSPERO (CRD42020183065; Supplementary file 1). The protocol set out the planned steps for the synthesis, acknowledging that the process would be iteratively undertaken. As the review progressed and evolved, a number of changes were made to the protocol which we describe here. Firstly, it became apparent that the scope and breadth of the five research questions initially set out in the protocol was too broad. Through progressive focusing[46,47], the Review team agreed to narrow the scope to focus only on *how* and *why* social prescribing evaluation works. The intended duration of the Realist Review was 6-months, but given the complexity and depth of the topic, this was extended to 14-months. A final search of the literature was planned at the end of the synthesis process. Through discussions it was agreed to not complete this final search due to pragmatic limitations, and the extent of data saturation for each of the Context-Mechanism-Outcome Configurations (CMOCs) presented in the review. An additional Review team member (MD) joined the Review after publication of the protocol and contributed to data extraction and synthesis. Finally, as discussed in step 5, no documents were excluded on the basis of relevance or rigour, but appraisal was noted as a descriptive characteristic.

An advisory group was convened with membership of social prescribing, evaluation and Realist experts and stakeholders, including members of the public. A wider social prescribing infrastructure group[48] was also drawn upon to support the development of the Realist Review design and comment on findings. These groups contributed to the development of the search strategy and commented on preliminary findings and CMOC development.

Six iterative steps were followed in the process of conducting this Realist Review. The design was informed by the steps set out by Pawson[37] and supplemented by additional approaches taken in other Realist Reviews which provided further depth and information regarding searches, data extraction, analysis, and synthesis[13,36,45,49-51]. The RAMESES publication standards[33] were used for reporting (see Supplementary file 2).

Step 1: Identifying the review questions.

This Realist Review is embedded within the ACCORD (A soCial presCribing evaluatiOn fRamework and reporting standarDs study) study, which aims to develop an evaluation framework and reporting standards for social prescribing evaluation using Realist and consensus methods. The Review scope and purpose were guided by the aim of ACCORD, and therefore aimed to address the following two questions: '*How do social prescribing evaluations work?'* and '*Why do social prescribing evaluations work?'*.

Step 2: Searching for studies.

A formal search strategy was developed based on an initial, unstructured background search of the literature and discussions with social prescribing stakeholders. Exploration of possible substantive theory, including different evaluation methodologies and designs, was also undertaken. This informed development of the initial programme theory.

Nine online databases were searched for documents referring to social prescribing, community and evaluation, published between 1st January 1998 and 31st May 2020. A grey literature search was also undertaken in Wales for public evaluation documents and a document request was sent out through extant social prescribing networks. Details of the databases and search strategy can be found in Supplementary file 3.

The formal published literature search yielded 2904 records and an additional 145 records were identified through the grey literature, a research network request and other sources. See Figure 1 for a PRISMA diagram detailing the search results.

[INSERT FIGURE 1]

Figure 1. PRISMA diagram of document selection.

Step 3: Study selection

Documents included in the Realist Review were required to make some reference to the social prescribing/link worker process but could focus on any component of the pathway. All evaluation and monitoring designs were included, but documents lacking description of evaluation design or not reporting findings (e.g., protocols, editorials) were excluded.

Screening of titles and abstracts was undertaken by ME, with a random sample of 10% of citations reviewed by JD to check for consistency in application of the screening tool[13]. Any disagreements were reviewed by CW and resolved through discussion[52]. Following title and abstract screening, 160 full-text documents were screened for eligibility by ME, with 10% screened by CW. Disagreements were discussed and resolved within the team. As a result, 83 documents were included in the Realist Review.

Step 4: Quality appraisal

All included documents were assessed for relevance to the initial programme theory and ability to contribute to context-mechanism-outcome configurations. Documents were appraised and categorised as ‘high’ (n=16), ‘moderate’ (n=35) and ‘low’ (n=32) in usefulness and relevance. See Table 2 for a description of the criteria. All documents were included in the Review, regardless of their appraisal, as it was agreed that even documents with ‘low’ relevance may have the potential to contribute ‘nuggets’ of information[53]. Documents were also appraised for rigour and trustworthiness of methods and quality of reporting. However,

as this Review focused on evaluation methods and designs, rather than evaluation findings, it was deemed inappropriate to exclude documents on the basis on low rigour, as these documents would still contribute to the programme theory, and the exploration of how social prescribing evaluations do and do not work.

Table 2. Appraisal criteria for usefulness and relevance

High	Moderate	Low
Papers that have high relevance – framing of research and research questions are highly matched to review questions, empirical findings are clearly described, rich description of process & context.	Papers that have a moderately relevant framing to theories – report on different but related interventions, similar outcomes, describe middle-range theories, areas of interest, potential to populate CMOCs.	Papers that met the inclusion criteria but little description of context and mechanism. Contains at least one idea or statement about the context, mechanisms or outcomes that can be used for refining theory & building CMOCs.

Step 5: Data extraction

Documents were split by methodology into four sub-cases for data extraction and management (Figure 1; Table 3); qualitative (n=21), quantitative (n=14), mixed methods (n=38) and reviews (n=10). Data extraction was undertaken by ME, using a bespoke data extraction Excel file, which captured document characteristics and context-mechanism-outcome configurations (CMOCs) and themes. Coding was inductive but guided by four questions which explored; whether the extracted data referred to a context, mechanism, or outcome; whether a partial or complete CMOC could be identified; whether the data was relevant to social prescribing evaluation and the programme theory; and whether the data was sufficiently trustworthy and rigorous[49]. As with screening, 10% of documents were reviewed and coded by CW. All preliminary CMOCs were coded and gathered under themes. If-then statements were developed for each CMOC to clarify the relationship between the three components, prior to data synthesis.

Step 6: Data synthesis

Using the preliminary codes, CMOCs were reviewed and gathered into overarching themes for each sub-case. A meta-matrix was used to identify common themes and codes across the four sub-cases. Using this, 77 codes were synthesised into 13 broader themes. These themes and corresponding preliminary CMOCs were mapped onto the initial programme

theory. Diagrams were created and iteratively refined to depict our thinking and the contribution of different documents to different parts of the programme theory. The CMOCs and programme theory were iteratively refined through ongoing document analysis and discussions with the Review team and advisory group.

Patient and Public Involvement

This Realist Review sits within the ACCORD study. The study was presented to the PRIME Centre Wales SUPER public & patient involvement group in its early phases of development. Comments from this group led to recruitment of two permanent PPI representatives to the WSSPR steering group to specifically support the ACCORD study. An additional PPI representative joined the Realist Review advisory group and commented on ideas and findings.

RESULTS

Document characteristics

Overall, 83 documents were included in this Realist Review (see Figure 1)[1,2,5,8,9,21-24,26-29,32,54-122]. Documents were split by methodology into four sub-cases, with representation from both the published and grey literature, although the majority of grey literature documents employed mixed methods (Table 3). Generally, studies lacked in-depth descriptions of the evaluation processes and methods. Most described evaluations of general, holistic social prescribing processes, including a link worker. Others included Arts on Prescription, Nature-based interventions, Welfare advice services, Time Credits programmes, Museum-for-Health programmes, National Exercise on Referral Services, Community Navigation programmes and nurse navigation. Documents were predominantly from the United Kingdom (England, n=44; Wales, n=26; Scotland, n=6; Northern Ireland, n=1), with few documents from Europe (n=4), Canada (n=1) and Australia (n=1). The formation of the research team varied between evaluations undertaken by independent teams, service-providers, and mixed-teams. A quarter of the documents provided no description of the composition of the research team. Supplementary file 4 provides a table of studies included in the review and their characteristics.

Table 3. Summary of documents within each sub-case

	Published	Grey	Total
Qualitative	20	1	21
Quantitative	13	1	14

Mixed methods	16	22	37
Review	8	2	10
Total	57	26	83

Main findings

The initial programme theory provided a linear explanation of social prescribing evaluation with no exploration of mechanisms (see Figure 2). This provided a basis for exploring context-mechanism-outcome configurations (CMOCs) which were identified through data extraction.

[INSERT FIGURE 2]

Figure 2. Initial programme theory for social prescribing evaluation

When considering social prescribing evaluation as an intervention, identification of outcomes was challenging. Three outcomes were identified, firstly, that the social prescribing evaluation design was acceptable to all stakeholders. Secondly, that it was high-quality, in that it employed rigorous evaluation techniques and was reported transparently. The final outcome was more distal; a nuanced understanding of the impact and effects of social prescribing. Through achievement of the first two outcomes, and the mechanisms discussed here, social prescribing evaluations extend our knowledge and understanding of the topic and identify areas for further research.

Data synthesis resulted in identification of five key themes which underpin our refined programme theory; *co-production, alignment, agency, sequential design* and *integration*.

Co-production with mixed stakeholder teams

If social prescribing evaluations are co-produced by mixed-teams (C), then sharing of experiences, expertise and diverse perspectives (M), increases evaluation acceptability (O) and trustworthiness (O).

Twenty documents contributed to the development of this CMOC[5,9,23,24,32,59,61,62,64,74,75,78,83,85,90,93-95,103,110]. In the early stages of the evaluation development, involvement of a breadth of stakeholders (e.g. social prescribing practitioners, service providers, commissioners, community assets, individuals receiving social prescribing) facilitates the co-development of an acceptable and trustworthy evaluation design. Materials are co-produced, based on existing literature and experiences of stakeholders, who can then comment on acceptability of design features for prospective participants. Where these aspects are informed by the views of stakeholders, participant

burden may be reduced, thus improving completion rates. Evaluations were frequently reliant on service providers for access to participants and data collection. Where those service providers were part of the research team, they held a sense of investment, and participant recruitment was more successful. Whilst this does pose a risk of bias, randomised approaches to participant recruitment were not effective in yielding sufficient participant numbers. A balance must therefore be struck between data integrity and feasibility of recruitment strategy. Improved trustworthiness of the evaluation is also fostered through co-production and sharing expertise and diverse perspectives. Reporting of public involvement in the included documents was sparse, with only six of the included 82 documents detailing their approach. However, those which did benefitted from access to diverse perspectives, contextual information and insight. This was crucial in developing trusting relationships with the wider community who were subsequently more engaged with the research.

Alignment between the intervention and evaluation design

If evaluators have strong contextual knowledge about the intervention and its' aims (C), then they can align the research question and design (M) to provide a coherent, cohesive evaluation (O).

Twenty-five documents provided evidence for this mechanism[8,9,22,27,28,29,32,59,62-64,67,69,71,72,74,75,78,83,89,95,113,118,121]. In designing a social prescribing evaluation, the research team must develop a comprehensive understanding of the intervention and how it may be working. This may be achieved through stakeholder discussions, service mapping, service observation, applying a framework or developing an initial programme theory. This thorough knowledge about the intervention is used to inform the development of the research questions and evaluation design. By completing this step, the evaluation is poised to assess whether the intervention is achieving what it set out to. Where possible, corresponding validated tools can then be selected for data collection, although a lack of appropriate outcome tools for social prescribing evaluation was highlighted in multiple documents. Clear reporting and presentation of the alignment between intervention aims and context, evaluation aims, evaluation design and outcomes is critical for the evaluation user, allowing them to draw conclusions about the intervention and its impact. An important caveat to this mechanism is that evaluations should not be designed too narrowly, only focusing on the aims of the intervention, as this risks missing unanticipated benefits or outcomes which may arise. The benefit of mixed methods designs which can capture outcomes aligned with the aims and undertake exploratory research is evident here.

Agency to make decisions

When there are pre-determined aspects to an evaluation (C), the researcher does not have the freedom to make decisions regarding the execution of the study (M), which minimises the quality of the data and evaluation (O).

Fifteen documents contributed to this CMOC[2,26,27,32,58,60-63,67,69,75,90,96,105]. Evaluations were rarely implemented alongside services and were more commonly commissioned and designed after service implementation. This often resulted in elements of the evaluation, e.g., the outcome tools used, research questions or methodology, being pre-determined by service developers, commissioners, or routine data monitoring systems. Lack of researcher agency during data collection was also common and negatively impacted on data quality, limiting insights and ability to draw conclusions. This was evident where data was collected by a third party, resulting in inconsistencies in time points when data was collected, incorrect completion of validated tools, incomplete datasets, insufficient data collected and self-reporting biases. Financial constraints and insufficient funding may be responsible for this lack of agency, impacting on researcher ability to collect data, use control groups, have sufficient follow-up periods and employ rigorous designs. We anticipate that the impact of funding on researcher agency and rigour is greater than that reported in the literature.

Use of a sequential, iterative design

If researchers use a mixed-methods sequential design for data collection (C), they can use existing data to inform subsequent design and data collection (M) to provide a nuanced, stronger understanding of the effects of social prescribing (O).

Thirteen documents provided evidence for this theme[22,23,32,57,62,64,67,75,89,103,113,115,116]. Use of a sequential mixed methods approach enabled researchers to use findings and insight from prior stages of the research to inform the design and development of subsequent stages. This was observed bi-directionally. Findings from quantitative components were used to inform the development of interview questions and areas of exploration in subsequent qualitative research. Datasets were used to develop purposive sampling strategies for qualitative research, including identification of different demographic groups and for individuals who responded differently to the social prescribing intervention. Exploratory qualitative research was used as a basis for designing quantitative research and selecting appropriate outcome tools. Qualitative observations were beneficial in identifying unanticipated benefits, particularly where these were not captured by selected outcome tools. This aided the researcher in developing a cumulative understanding of the social prescribing intervention and its effects.

Integration of findings to produce a full picture

This theme was heavily supported; forty-two documents contributed to its' development and it is split into two CMOCs[2,5,9,21-24,26,27,32,59-61,63,67-69,73,75,76,78,80,83,86-89,93-95,103,108-111,113-116,118,121,122].

When there are multiple sources of data (C), researchers can integrate and triangulate findings (M) to provide a nuanced, stronger understanding of the effects of social prescribing (O).

Social prescribing evaluations generate multiple sources of data. This includes data collected from different participant groups, using different methods and gathered at different time points. Triangulation of perspectives between different participants, particularly non-participant stakeholders, offers a more complete view of the broader impact of different dimensions of the intervention and the experiences of non-attenders, or hard to reach groups. A social prescribing evaluation does not sit in isolation, and the existing literature and previous research conducted about social prescribing must also be used for contextualising and explaining findings from their research, to contribute to the developing evidence base.

If qualitative and quantitative findings are reported separately (C), then there is a lack of integration (M), which results in a fragmented understanding of the effects of social prescribing (O).

Many of the documents included in the Review reported on single components of broader mixed method, multi-component studies. Despite this, findings and conclusions in different components of the same study were rarely integrated or triangulated. This lack of integration resulted in a fragmented, disjointed understanding of the intervention and its' impact. Where studies are presented independently and not contextualised and integrated with existing knowledge, the evaluation user is unable to fully understand the intervention and unpick its inherent complexity. Studies which did successfully integrate their findings, either in the reporting of their results or in an overall interpretative analysis section provided the reader with an overarching understanding of the impact of social prescribing and a more nuanced understanding of the effects. Where possible, researchers should provide a commentary on the overall findings drawn from integrated mixed methods research.

Development of the refined programme theory

The initial programme theory (Figure 2) presented a logic model upon which contexts, mechanisms and outcomes were placed as they were extracted from the literature. Initially, a linear relationship was proposed between the three identified components of social

prescribing evaluation: preparation (1), conducting the study (2) and interpretation (3). During the interpretation component (3), identification of new research questions and proposals for future research occur. We therefore propose a cyclical relationship between the three components, although acknowledge this may not consistently occur (represented by the dotted line). The five identified themes discussed above and their corresponding CMOCs relate to each of these components. Elements of the overarching context within which the evaluation takes place; e.g. funding, stakeholder involvement, service status, contextual knowledge, theoretical stance and the target population, were also considered relevant for inclusion in the refined programme theory.

The refined programme theory sought to represent the interplay between the overarching contexts, the themes and corresponding CMOCs in generating the outcome of an acceptable, high quality social prescribing evaluation, within the realm of the three components. The refined programme theory for social prescribing evaluation can be found in Figure 3.

[INSERT FIGURE 3]

Figure 3. Refined programme theory for social prescribing evaluation

DISCUSSION

The present Realist Review sought to understand how and why social prescribing evaluations work. It included 83 social prescribing evaluation documents sourced from the international published literature and grey literature in Wales. A range of evaluation approaches and methodologies were employed, but documents lacked in-depth detail and descriptions of these approaches. Systematic reviews of social prescribing have also emphasised the poor reporting of their evaluations[29]. Five themes were identified, with corresponding Context-Mechanism-Outcome Configurations (CMOCs) through which the social prescribing evaluation worked to deliver an acceptable and high-quality evaluation.

The value of stakeholder involvement from the outset of the evaluation was evident, it yielded a sense of investment, offered insight and contextual knowledge and improved acceptability of the design through co-production. Chatterjee et al.[62] also highlighted the benefit of stakeholder involvement, in integrating the views and perspectives of diverse groups and understanding their expectations. Utilisation-focused evaluation[123] is evaluation undertaken with the intended users at the forefront. It posits that evaluations will be more useful and effective if intended users have a sense of ownership over the evaluation. The utility and design of the evaluation is therefore constantly informed and guided by the stakeholders. The lack of patient and public involvement (PPI) in the included

documents was surprising. Social prescribing is a person-centred intervention[124], and this should be reflected in the design of its evaluation. PPI is widely advocated for in research and its benefits are well known[125] and were evidenced in the studies which involved the public in this Review. The UK Standards for Public Involvement[126] provide guidance on good practice and must be followed to garner effective social prescribing evaluations.

Mixed methods approaches were optimal for gaining a nuanced, in-depth understanding of the social prescribing intervention under evaluation, particularly when used sequentially and findings were integrated. Often this integration was missing from the evaluation documents, resulting in a partial view of how services were working[63]. Even where each component of the mixed methods study was reported separately, the depth and nuances were lacking. Going forward, evaluations must report on the integration of different study components and the relationship between their findings and the existing literature. This will result in cumulative development of the evidence base, minimising duplication and contributing to a cohesive understanding of social prescribing.

Given the inconsistencies in the evidence base, researchers have called for a co-ordinated framework for social prescribing evaluation[1,15,29]. The refined programme theory presented here offers principles for good practice in social prescribing evaluation. These provided the foundation for the development of a series of evidence-based recommendations for social prescribing evaluation (Table 4). These recommendations will directly feed into the development of the evaluation framework for social prescribing through the ACCORD study. Provision of such a framework will be particularly valuable given the limited evaluation capacity in practice[14,127]. It will provide clear guidance and support for conducting monitoring and collecting data, which can be used in subsequent evaluations, mitigating the effects of low researcher agency and control. Similarly, the need for reporting standards was made clear through this Review. The sparsity and lack of detail in reporting the methods, alignment and findings of social prescribing evaluations has been identified elsewhere[8,29].

Finally, the need for sufficient funding and investment in social prescribing evaluation must be addressed. Evaluations to date have been criticised for lacking rigour and having a high risk of bias[1,15]. An evaluation framework will only be useful if it is accompanied with funding to undertake high-quality, acceptable evaluations of social prescribing. Some evaluations included in this Review alluded to the negative impact of limited funding, but the impact is anticipated to be much larger. Future research needs to explore the funding requirements for social prescribing evaluation and monitoring, and assess how this may

change over time, as the evidence base for social prescribing develops, and the needs and priorities that it seeks to address change.

Table 4. Recommendations for social prescribing evaluation

1. Apply a mixed-methods design to produce an evaluation which captures the impact of social prescribing at multiple levels.
2. Where possible, design social prescribing evaluations iteratively, so that each stage can build upon the previous stage so knowledge can be accumulated and the evidence base can continue to grow.
3. Undertake a mapping exercise to identify all stakeholders for a social prescribing evaluation. Involve stakeholders from the outset to co-produce the study design and materials.
4. Involve stakeholders in the interpretation, analysis and dissemination of findings so that the evaluation is grounded in the real world and findings can be translated back into practice, to make a difference to people involved in social prescribing.
5. Involve members of the public throughout social prescribing evaluation in a meaningful way. Follow the UK Standards for Public Involvement and report public involvement when disseminating findings.
6. Take time at the start of the evaluation, before the study design is determined, to understand the social prescribing intervention or service that is going to be evaluated. Identify the aims, objectives, participants, context, setting, activities, processes that are involved.
7. Align the evaluation with the social prescribing intervention so that the evaluation can answer questions that are relevant to the intervention and to stakeholders.
8. Seek advice or use an evaluation framework to inform evaluation decision making. This will maximise data quality, and ensure a consistent approach which can be compared with other similar evaluations.
9. For rigorous evaluations of social prescribing, remove the burden on link workers and use independent researchers to collect data at the appropriate time point.
10. Provide sufficient funding for social prescribing evaluations, to ensure that they can be undertaken rigorously, without bias, to address gaps identified by services or in the literature.

11. Integrate mixed methods findings to generate a more in-depth, nuanced understanding of social prescribing, how it works, for whom and in what context.
12. Triangulate findings from multiple data sources and different perspectives to generate a more in-depth, nuanced understanding of social prescribing, how it works, for whom and in what context.
13. When using mixed-methods or conducting a multi-component study, produce an overarching commentary or narrative, explaining the links between the different components and identifying remaining gaps for future research.
14. Provide in-depth descriptions of methods used and decisions made to facilitate judgments about the rigour and quality of the study, and to enable the study to be replicated in different contexts.
15. Report good practice, strengths, successes, failed approaches and methods to mitigate challenges in social prescribing evaluation to support future evaluators.

Strengths, limitations and future research directions

A strength of this Realist Review is its application of a Realist logic of enquiry to a novel area; social prescribing evaluation. To our knowledge, this is the first Realist Review in this area, and the first exploring evaluation overall. Previous systematic reviews had provided descriptive commentaries about the social prescribing evidence base and evaluations to date[1,29,62]. They critiqued the methods employed and highlighted low rigour and a high risk of bias. However, they did not seek to explore the reasons as to why this may have occurred, and explain the weaknesses in the evidence base, and what can be done to develop successful social prescribing evaluations. This Review addresses this knowledge gap and highlights mechanisms through which evaluations may be acceptable, high quality and produce a nuanced understanding of social prescribing. A series of recommendations (Table 4) for social prescribing evaluation have been generated based on the programme theory from this Realist Review, which will be useful for people conducting evaluations of social prescribing across the spectrum.

Another strength of this review is its placement within the ACCORD study. The findings from the Realist Review will be used in conjunction with two consensus studies, using Group Concept Mapping[128] and a world café approach[129] to explore social prescribing evaluation. Taken together, these studies will inform the development of an evidence-based, evaluation framework, reporting standards and training materials for people undertaking

social prescribing evaluations. Direct application of the findings and their relevance to these outputs, which will be widely disseminated, fits with the translational model of research[130]. It means that findings will be directly relevant and have a direct impact on the progress of social prescribing evaluations in the future.

As previously mentioned, the documents included in this Realist Review generally lacked in-depth information regarding the methods, design and processes used for their evaluations. Evidence syntheses are reliant on secondary data, and how findings are reported by authors[42]. This proved challenging for this review, as documents rarely provided in-depth explanations of the mechanisms, causality or decision-making processes, which could contribute to context-mechanism-outcome configurations. An example of this is the lack of information about how social prescribing evaluations were funded and the funding allocated to them. Funding is an important contextual factor, which will likely impact on how the rest of the evaluation is able to be undertaken. However, where studies lacked information about the funding, it was not possible to understand the full impact, and the mechanisms through which this may have impacted the outcomes. This highlights a clear need for transparent reporting and reporting standards for social prescribing evaluations so that evaluation users have access to the necessary information to make their own judgments about the quality and rigour of the evaluation.

Finally, the grey literature search was limited to documents from Wales due to differences in the models of social prescribing between Wales and other UK nations[45,131] and differing models of health and social care due to devolution[132]. Expansion of the grey literature search across the United Kingdom and/or internationally may have yielded more relevant documents which could have supported CMOC development.

Conclusions and recommendations

To our knowledge this is the first attempt to apply a Realist logic of enquiry to the issue of evaluation, particularly in the context of social prescribing. This Realist Review offers insight into the current status of social prescribing evaluation, it identifies how and why social prescribing works, barriers to its success and examples of good practice. The review also clearly highlights the importance of a standardised evaluation framework and reporting standards for social prescribing going forward. A series of recommendations have been developed based on the findings, which will feed directly into the ACCORD study and are useful for practice and research in the undertaking of future social prescribing evaluations. The next stage of this programme of work is to develop and test an evidence-based evaluation framework and reporting standards for social prescribing, using the evidence from this Review and consensus research.

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STUDY PROTOCOL

Provided in Supplementary file 1.

COMPETING INTEREST

The authors do not have any competing interests to declare.

DATA SHARING STATEMENT

This study was a review of secondary data and no new primary data was generated. Additional information about the extracted data are available from the corresponding author upon request.

ETHICAL APPROVAL

As this Realist Review drew upon secondary evidence, ethical approval was not required.

AUTHOR CONTRIBUTIONS

ME prepared the initial protocol, developed the search strategy, facilitated the advisory group, undertook the main searches and document screening at title, abstract and full-text level, carried out the coding and development of CMOCs and refined programme theory and prepared the final report. ME prepared the full manuscript.

MD supported development of CMOCs and the refined programme theory, contributed to the interpretation of findings and revised the final report. MD reviewed and commented on the manuscript.

JD contributed to the formal search strategies, carried out consistency checks on documents in screening and provided practice expertise and perspective. JD reviewed and commented on the manuscript.

CW was the principal investigator and developed the research project. Carolyn contributed to the development of the protocol and search strategy, carried out consistency checks on document screening and coding, developed and refined the programme theory and CMOCs and revised the final report. CW reviewed and commented on the manuscript.

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REFERENCES

1 Bickerdike L, Booth A, Wilson PM, et al. Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ open* 2017;7(4):e013384.

2 Pescheny JV, Gunn LH, Randhawa G, et al. The impact of the Luton social prescribing programme on energy expenditure: a quantitative before-and-after study. *BMJ open* 2019;9(6):e026862.

3 Jani A, Liyanage H, Hoang U, et al. Use and impact of social prescribing: a mixed-methods feasibility study protocol. *BMJ open* 2020;10(9):e037681.

4 Buck D, Ewband L. What is social prescribing? *The Kings Fund* 2020. https://www.kingsfund.org.uk/publications/social-prescribing [Accessed 31.08.2021]

5 Moffatt S, Steer M, Lawson S, et al. Link worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions. *BMJ open* 2017;7(7):e015203.

6 UK Government. Press release: £5 million for social prescribing to tackle the impact of COVID-19. 2020. https://www.gov.uk/government/news/5-million-for-social-prescribing-to-tackle-the-impact-of-covid-19 [Accessed 31.08.2021].

7 Husk K, Elston J, Gradinger F, et al. Social prescribing: where is the evidence?. *Br J Gen Pract* 2019;69(678):6-7.

8 Rempel ES, Wilson EN, Durrant H, et al. Preparing the prescription: a review of the aim and measurement of social referral programmes. *BMJ open* 2017;7(10):e017734.

9 Carnes D, Sohanpal R, Frostick C, et al. The impact of a social prescribing service on patients in primary care: a mixed methods evaluation. *BMC Health Serv Res* 2017;17(1):1-9.

10 NHS England. Social Prescribing, *as cited in* CordisBright, 2019, What works in social prescribing? https://www.cordisbright.co.uk/admin/resources/08-hsc-evidence-reviews-social-prescribing.pdf [Accessed 15.03.2019].

11 Rees S, Thomas S, Elliott M, et al. Creating community assets/social capital within the context of social prescribing. Findings from the workshop held 17/7/2019. http://www.wsspr.wales/resources/Rees%20et%20al%202019.pdf [Accessed 29.06.2021].

12 Social Prescribing Network. Report of the Annual Social Prescribing Network Conference. Report. 2016.

13 Tierney S, Wong G, Roberts N, et al. Supporting social prescribing in primary care by linking people to local assets: a realist review. *BMC Med* 2020;18(1):1-5.

14 Wallace C, Elliott M, Thomas S. Using consensus methods to develop a Social Prescribing Learning Needs Framework for practitioners in Wales. *Perspect Public Health* 2021;141(3):136-48.

15 Roberts T, Erwin C, Pontin D, et al. Social Prescribing and Complexity Theory: A Systematic Literature Review. *Executive summary.* http://www.wsspr.wales/resources/Roberts%20et%20al%20systematic%20review%20executive%20summary.pdf [Accessed 31.08.2021].

16 NHS England. The NHS Long Term Plan. 2019. https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf [Accessed 31.08.2021].

17 SNP. SNP Manifesto 2021. Scotland's Future. 2021. https://issuu.com/hinksbrandwise/docs/04_15_snp_manifesto_2021___a4_document?mode=window [Accessed 31.08.2021].

18 Welsh Government. Programme for Government. 2021. https://gov.wales/sites/default/files/publications/2021-06/programme-for-government-2021-to-2026.pdf [Accessed 31.08.2021].

19 Health and Social Care Board. Social prescribing. 2018. http://www.hscboard.hscni.net/social-prescribing/ [Accessed 29.06.2021].

20 Munoz SA, Terje A, Bailey H. Evaluating Social Prescribing. Report. 2020. https://www.iriss.org.uk/sites/default/files/2020-06/insights-55_0.pdf [Accessed 29.06.2021].

21 Wildman JM, Moffatt S, Steer M, et al. Service-users' perspectives of link worker social prescribing: a qualitative follow-up study. BMC Public Health 2019;19(1):1-2.

22 Woodhead C, Khondoker M, Lomas R. Impact of co-located welfare advice in healthcare settings: prospective quasi-experimental controlled study. *Br J Psychiatry* 2017;211(6):38895-95

23 Payne K, Walton E, Burton C. Steps to benefit from social prescription: a qualitative interview study. *Br J Gen Pract* 2020;70(690):e36-44.

24 Redmond M, Sumner RC, Crone DM, et al. 'Light in dark places': exploring qualitative data from a longitudinal study using creative arts as a form of social prescribing. *Arts health* 2019;11(3):232-45.

25 Loftus AM, McCauley F, McCarron MO. Impact of social prescribing on general practice workload and polypharmacy. *Public Health*. 2017;148:96-101.

26 Panagioti M, Reeves D, Meacock R, et al. Is telephone health coaching a useful population health strategy for supporting older people with multimorbidity? An evaluation of reach, effectiveness and cost-effectiveness using a 'trial within a cohort'. *BMC Med*. 2018;16(1):1-5.

27 Mercer SW, Fitzpatrick B, Grant L, et al. The Glasgow 'Deep End' Links Worker Study Protocol: a quasi-experimental evaluation of a social prescribing intervention for patients with complex needs in areas of high socioeconomic deprivation. *J Multimorbidity Comorbidity* 2017;7(1):1-10.

28 Lloyd-Evans B, Frerichs J, Stefanidou T, et al. The Community Navigator Study: Results from a feasibility randomised controlled trial of a programme to reduce loneliness for people with complex anxiety or depression. *PLOS One* 2020;15(5):e0233535.

29 Pescheny JV, Randhawa G, Pappas Y. The impact of social prescribing services on service users: a systematic review of the evidence. *Eur J Public Health* 2020;30(4):664-73.

30 Wallace C, Stone J, Beeckman L, et al. All Wales Social Prescribing Research Network. What does good look like? Setting its outcome principles and Framework for Wales. Consultation Report. 2018.

31 Evans D. Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions. *J Clin Nurs* 2003;12(1):77-84.

32 Woodall J, Trigwell J, Bunyan AM, et al. Understanding the effectiveness and mechanisms of a social prescribing service: a mixed method analysis. *BMC Health Serv Res* 2018;*18*(1):1-12.

33 Wong G, Greenhalgh T, Westhorp G, et al. RAMESES publication standards: realist syntheses. *BMC Med* 2013;11(1):1-4.

34 Pawson R, Tilley N. Realistic evaluation. SAGE; 1997.

35 Dalkin SM, Greenhalgh J, Jones D, et al. What's in a mechanism? Development of a key concept in realist evaluation. *Implement Sci* 2015;10(1):1-7.

36 Pawson R, Greenhalgh T, Harvey G. et al. Realist review-a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy* 2005;10(1):21-34.

37 Pawson R. Digging for nuggets: how 'bad' research can yield 'good' evidence. *Int J Soc Res Methodol* 2006;9(2):127-142.

38 Hawkins AJ. Realist evaluation and randomised controlled trials for testing program theory in complex social systems. *Evaluation* 2016;22(3):270-285.

39 Bunn F, Goodman C, Jones PR, et al. Managing diabetes in people with dementia: a realist review. *Health Technol Assess* 2017;21(75).

40 Jagosh J, Macaulay AC, Pluye P, et al. Uncovering the benefits of participatory research: implications of a realist review for health research and practice. *Milbank Q* 2012;*90*(2):311-346.

41 Astbury B, Leeuw F. Unpacking Black Boxes: Mechanisms and Theory Building in Evaluation. *Am J Eval* 2010;31(3):363-81.

42 Papoutsi C, Mattick K, Pearson M, et al. Interventions to improve antimicrobial prescribing of doctors in training (IMPACT): a realist review. *Health Serv Deliv Res* 2018;6(10)

43 Wong G, Westhorpe G, Pawson R, et al.. Realist Synthesis. RAMESES Training Materials. 2013. https://www.ramesesproject.org/media/Realist_reviews_training_materials.pdf [Accessed 30.06.2021].

44 Pawson R. The science of evaluation: A Realist manifesto. SAGE; 2013.

45 Husk K, Blockley K, Lovell R, et al. What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. *Syst Rev* 2016;5:93.

46 Britten N, Jones R, Murphy M, et al. Qualitative research methods in general practice and primary care. *Fam Pract* 1995;12:104-114

47 Wong G, Greenhalgh T, Pawson R. Internet-based medical education: a realist review of what works, for whom and in what circumstances. *BMC Med Educ* 2010;10(1):1-10.

48 Wales School for Social Prescribing Research website. 2021. http://www.wsspr.wales/ [Accessed 31.08.2021].

49 Ford JA, Wong G, Jones AP, et al. Access to primary care for socioeconomically disadvantaged older people in rural areas: a realist review. *BMJ open* 2016;*6*(5):e010652.

50 Davies F, Wood F, Bullock A, et al. Interventions to improve the self-management support health professionals provide for people with progressive neurological conditions: protocol for a realist synthesis. *BMJ open* 2017;*7*(3):e014575.

51 North R, Anderson P, Harris S, et al. Wet Age Related Macular Degeneration Services in the Community – pathfinder evaluation. Report. 2018.

52 Perez Nyssen O, Taylor SJC, Wong G, et al. Does therapeutic writing help people with long-term conditions? Systematic review, realist synthesis and economic considerations. *Health Technol Assess* 2016;20(27).

53 Pawson R. Digging for nuggets: how 'bad' research can yield 'good' evidence. *Int J Soc Res Methodol* 2006;*9*(2):127-142.

54 Age Connects Cardiff & the Vale. Ageing Well in the Vale of Glamorgan Senior Health Shop. End of Year Report 2016 to 2017. Report. 2017.

55 Age Connects Cardiff & the Vale. Hap End of Year Report – April 2016 to March 2017. Report. 2017.

56 Age Connects Cardiff & the Vale. Project summary. Report. 2017.

57 Jones C. Research summary: Evaluating the Health Precinct. Report. 2019.

58 Jones C, Lynch M. Spice Time Credits Social Prescribing Pilot Evaluation. Final Report. 2019.

59 Bertotti M, Frostick C, Hutt P, et al. A realist evaluation of social prescribing: an exploration into the context and mechanisms underpinning a pathway linking primary care with the voluntary sector. *Prim Health Care Res Dev* 2018;*19*(3):232-245.

60 Bird EL, Biddle MSY, Powell JE. General practice referral of 'at risk' populations to community leisure services: Applying the RE-AIM framework to evaluate the impact of a community-based physical activity programme for inactive adults with long-term conditions. *BMC Public Health* 2019;*19*(1):1-14.

61 Campbell J, Winder R, Richards SH, et al. Exploring the relationships between provision of welfare benefits advice and the health of elderly people: a longitudinal observational study and discussion of methodological issues. *Health Soc Care Community* 2007;*15*(5):454-463.

62 Chatterjee HJ, Camic PM, Lockyer B, et al. Non-clinical community interventions: a systematised review of social prescribing schemes. *Arts Health* 2018;*10*(2):97-123.

63 Cheetham M, Van der Graaf P, Khazaeli B, et al. "It was the whole picture" a mixed methods study of successful components in an integrated wellness service in North East England. *BMC Health Serv Res* 2018;*18*(1):1-10.

64 Craig GM, Booth H, Hall J, et al. Establishing a new service role in tuberculosis care: the tuberculosis link worker. *J Adv Nurs* 2008;*61*(4):413-424.

65 Crone DM, Sumner RC, Baker CM, et al. 'Artlift' arts-on-referral intervention in UK primary care: updated findings from an ongoing observational study. *Eur J Public Health* 2018;*28*(3):404-409.

66 Public Health Wales. Evaluation of the Cwm Taf Social Prescribing Initiative. Report. 2015.

67 Dayson C. Evaluating social innovations and their contribution to social value: the benefits of a 'blended value' approach. *Policy Polit* 2017;*45*(3):395-411.

68 Dayson C, Painter J, Bennett E. Social prescribing for patients of secondary mental health services: emotional, psychological and social well-being outcomes. *J Public Ment Health* 2020;19(4):271-279.

69 Elston J, Gradinger F, Asthana S, et al. Does a social prescribing 'holistic'link-worker for older people with complex, multimorbidity improve well-being and frailty and reduce health and social care use and costs? A 12-month before-and-after evaluation. *Prim Health Care Res Dev* 2019;20:e135.

70 Grayer J, Cape J, Orpwood L, et al. Facilitating access to voluntary and community services for patients with psychosocial problems: a before-after evaluation. *BMC Fam Pract* 2008;*9*(1):1-8.

71 Grow Cardiff. The Growing Project. A joint NHS/Neighbourhood Partnership project delivered by Grow Cardiff. Pilot Project Report June. Report. 2017.

72 Grow Cardiff, 2019. Evaluating the Grow Well project. Process map [internal].

73 Hanlon P, Gray CM, Chng NR et al. Does Self-Determination Theory help explain the impact of social prescribing? A qualitative analysis of patients' experiences of the Glasgow 'Deep-End' Community Links Worker Intervention. *Chronic illness* 2019;3:1742395319845427.

74 Hassan SM, Giebel C, Morasae EK. Social prescribing for people with mental health needs living in disadvantaged communities: the Life Rooms model. *BMC Health Serv Res* 2020;*20*(1):1-9.

75 Heijnders ML, Meijs JJ. 'Welzijn op Recept' (Social Prescribing): a helping hand in re-establishing social contacts–an explorative qualitative study. *Prim Health Care Res Dev* 2018;*19*(3):223-231.

76 Holding E, Thompson J, Foster A, et al. Connecting communities: A qualitative investigation of the challenges in delivering a national social prescribing service to reduce loneliness. *Health Soc Care Community* 2020;*28*(5):1535-1543.

77 Husk K, Blockley K, Lovell R, et al. What approaches to social prescribing work, for whom, and in what circumstances? A realist review. *Health Soc Care Community* 2020;*28*(2):309-324.

78 Irvine KN, Marselle MR, Melrose A, et al. Group outdoor health walks using activity trackers: measurement and implementation insight from a mixed methods feasibility study. *Int J Environ Res Public Health* 2020;*17*(7):2515.

79 Jarrett M, Thornicroft G, Forrester A, et al. Continuity of care for recently released prisoners with mental illness: a pilot randomised controlled trial testing the feasibility of a critical time intervention. *Epidemiol Psychiatr Sci* 2012;*21*(2):187-193.

80 Jensen A. Culture vitamins–An arts on prescription project in Denmark. *Perspect Public Health* 2019;*139*(3):131-136.

81 Jensen A, Bonde LO. The use of arts interventions for mental health and wellbeing in health settings. *Perspect public health* 2018;*138*(4):209-214.

82 Jensen A, Torrissen W. Aesthetic engagement as health and wellbeing promotion. *J Public Ment Health* 2019;18(4):240-247.

83 Kellezi B, Wakefield JR, Stevenson C, et al. The social cure of social prescribing: a mixed-methods study on the benefits of social connectedness on quality and effectiveness of care provision. *BMJ open* 2019;9(11):e033137.

84 Kilgarriff-Foster A, O'Cathain A. Exploring the components and impact of social prescribing. *J Public Ment Health*. 2015;14(3):127-134.

85 Kingstone T, Bartlam B, Burroughs H, et al. Can support workers from AgeUK deliver an intervention to support older people with anxiety and depression? A qualitative evaluation. *BMC Fam Pract* 2019;*20*(1):1-16.

86 Loftus AM, McCauley F, McCarron MO. Impact of social prescribing on general practice workload and polypharmacy. *Public Health* 2017;*148*:96-101.

87 Lloyd E, et al. Social impact of the Arfon Community Link project. Social Return on Investment (SROI) Forecast report June 2016-September 2018. Report. 2018.

88 Maughan DL, Patel A, Parveen T, et al. Primary-care-based social prescribing for mental health: an analysis of financial and environmental sustainability. *Prim Health Care Res Dev* 2016;*17*(2):114-121.

89 Maund PR, Irvine KN, Reeves J, et al. Wetlands for wellbeing: piloting a nature-based health intervention for the management of anxiety and depression. *Int J Environ Res Public Health* 2019;*16*(22):4413.

90 Milestone Tweed. Reducing breathlessness through group singing. Singing for Lung Health Impact Report. February 2018. Report. 2018.

91 Mon Community Link. Some case stories to date. Report. 2020.

92 Natural England. Good practice in social prescribing for mental health: the role of nature-based interventions. Natural England Commissioned Report NECR228. Full report. 2020.

93 Pescheny J, Randhawa G, Pappas Y. Patient uptake and adherence to social prescribing: a qualitative study. *BJGP open* 2019;2(3).

94 Pesut B, Duggleby W, Warner G, et al. Volunteer navigation partnerships: Piloting a compassionate community approach to early palliative care. *BMC Palliat Care* 2018;*17*(1):1-11.

95 Poulos RG, Marwood S, Harkin D, et al. Arts on prescription for community-dwelling older people with a range of health and wellness needs. *Health Soc Care Community* 2019;*27*(2):483-492.

96 Prior F, Coffey M, Robins A, et al. Long-Term health outcomes associated with an exercise referral scheme: an observational longitudinal follow-up study. *J Phys Act Health* 2019;*16*(4):288-293.

97 Public Health Wales. Research and Evaluation Highlights, 2018/19. Report. 2019.

98 Public Health Wales. Social Prescribing in Wales, Primary Care Hub, May 2018. Report. 2018.

99 Rainbow Centre Penley. Social Prescribing: A brief introduction. Report. 2019.

100 Rainbow Centre Penley. Wrexham's Model of Social Prescribing. Report. 2019.

101 Rainbow Centre Penley. July and August 2019 Newsletter brought to you by the Rainbow Centre (newsletter 5). Report. 2019.

102 Rhondda GP Cluster. Rhondda GP Cluster Wellbeing Coordinator Evaluation Report April – December 2017. Report. 2017.

103 Skivington K, Smith M, Chng NR, et al. Delivering a primary care-based social prescribing initiative: a qualitative study of the benefits and challenges. *Br J Gen Pract* 2018;*68*(672):487-e494.

104 Smith TO, Jimoh OF, Cross J, et al. Social prescribing programmes to prevent or delay frailty in community-dwelling older adults. *Geriatrics* 2019;*4*(4):65.

105 Social Prescribing Torfaen. Social prescribing in Torfaen: A partnership between North & South Torfaen Neighbourhood Care Networks, Our learning so far: October 2015 – March 2017. Report. 2017.

106 Social Prescribing Torfaen. Social prescribing in Torfaen 2017-2018. Report. 2018.

107 Social Value Cymru. Arfon Community Link: Community link social impact report 2018-2019. Report. 2019.

108 Stalker KO, Malloch M, Barry MA, et al. Local area co-ordination: strengthening support for people with learning disabilities in Scotland. *Br J Learn Disabil* 2008;*36*:215-219.

109 Stickley T, Eades M. Arts on prescription: a qualitative outcomes study. *Public Health* 2013;*127*(8):727-734.

110 Stickley T, Hui A. Social prescribing through arts on prescription in a UK city: Participants' perspectives (Part 1). *Public health* 2012;*126*(7):574-579.

111 Stickley T, Hui A. Social prescribing through arts on prescription in a UK city: Referrers' perspectives (part 2). *Public health* 2012;*126*(7):580-586.

112 Jones C, Lynch M. Grow Well social prescribing pilot evaluation. Final Report. 2020.

113 Thomson LJ, Lockyer B, Camic PM, et al. Effects of a museum-based social prescription intervention on quantitative measures of psychological wellbeing in older adults. *Perspect Public Health* 2018;*138*(1):28-38.

114 Todd C, Camic PM, Lockyer B, et al. Museum-based programs for socially isolated older adults: Understanding what works. *Health & place* 2017;*48*:47-55.

115 Van de Venter E, Buller AM. Arts on referral interventions: a mixed-methods study investigating factors associated with differential changes in mental well-being. *J Public Health* 2015;*37*(1):143-150.

116 Vogelpoel N, Jarrold K. Social prescription and the role of participatory arts programmes for older people with sensory impairments. *Int J Integr Care* 2014;22(2):39-50.

117 Warm Wales. Project Overview Healthy Homes Healthy People. Report. 2019.

118 Tempo Time Credits. Evaluation of impact Tempo Time Credits. Report. 2020.

119 Webb R, Thompson JES, Ruffino JS, et al. Evaluation of cardiovascular risk-lowering health benefits accruing from laboratory-based, community-based and exercise-referral exercise programmes. *BMJ open SEM* 2016;*2*(1):e000089.

120 Wellbeing 4 U. Social Prescribing Impact Report April 2016 – March 2018. Report. 2018.

121 Murphy S, Moore G, Raisanen L, et al. The evaluation of the National Exercise Referral Scheme in Wales. Welsh Assembly Government Social Research. Report. 2010.

122 Whitelaw S, Thirlwall C, Morrison A, et al. Developing and implementing a social prescribing initiative in primary care: insights into the possibility of normalisation and sustainability from a UK case study. *Prim health Care Res Dev* 2017;*18*(2):112-121.

123 Patton MQ. Utilization-focused evaluation. In *International handbook of educational evaluation*. Springer, Dordrecht; 2003.

124 Social Care Institute for Excellence. Social Prescribing. 2020. https://www.scie.org.uk/prevention/connecting/social-prescribing [Accessed 31.08.2021].

125 Brett JO, Staniszewska S, Mockford C, et al. A systematic review of the impact of patient and public involvement on service users, researchers and communities. *Patient* 2014;7(4):387-95.

126 NIHR Involve. National standards for public involvement. 2019. https://www.invo.org.uk/posttypepublication/national-standards-for-public-involvement/ [Accessed 22.10.2019].

127 Roberts T, Lloydwin C, Pontin D, et al. The role of social prescribers in wales: a consensus methods study. *Perspect Public Health*. 2021;1757913921990072.

128 Kane M, Trochim WM. Concept mapping for planning and evaluation. Sage Publications, Inc; 2007.

129 MacFarlane A, Galvin R, O'Sullivan M, et al. Participatory methods for research prioritization in primary care: an analysis of the World Café approach in Ireland and the USA. *Fam Pract*. 2017;34(3):278-84.

130 Cooksey D. A review of UK health research funding. HM Treasury; 2006.

131 Wallace C, Davies M, Elliott M, et al. Understanding social prescribing in Wales. 2021. http://www.wsspr.wales/resources/PHW_SP_Report_FINAL.pdf [Accessed 10.01.2022].

132 Greer SL. Devolution and health in the UK: Policy and its lessons since 1998. *Br Med Bulletin*. 2016;118(1):16.

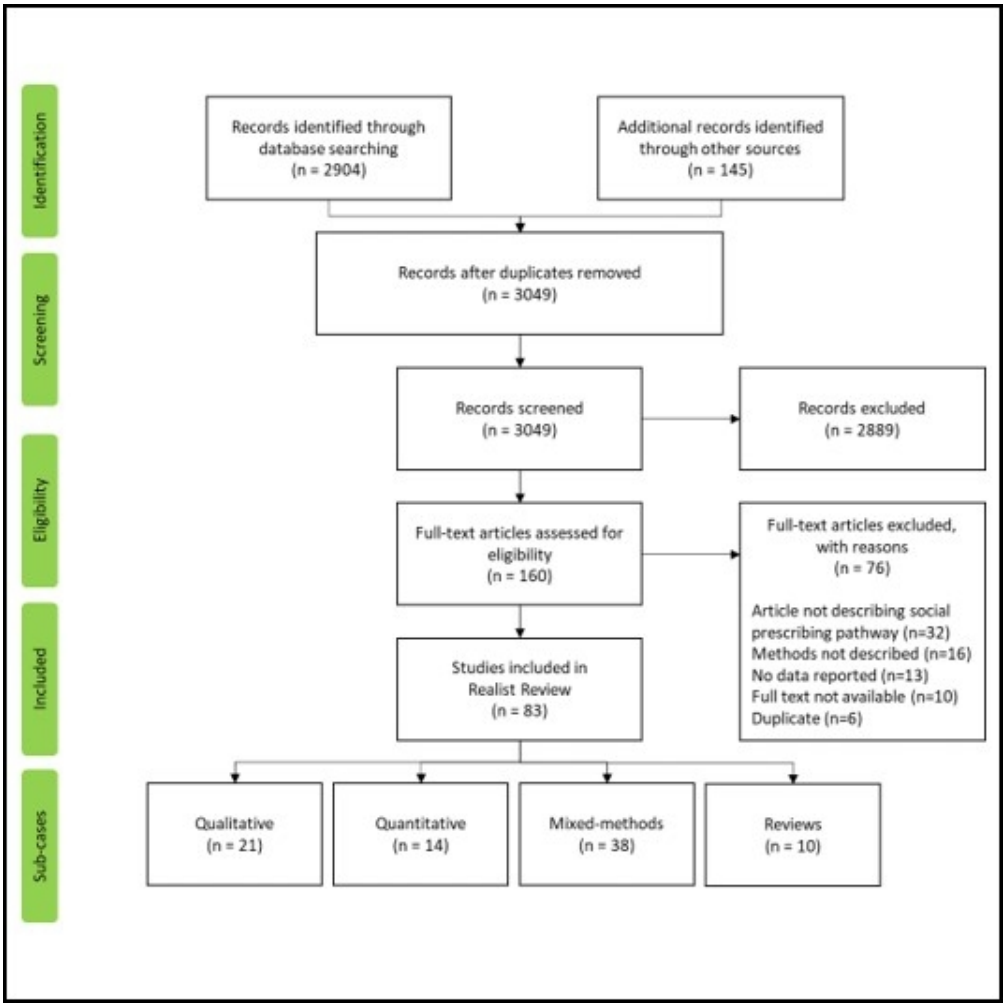

Figure 1. PRISMA diagram of document selection.

45x45mm (300 x 300 DPI)

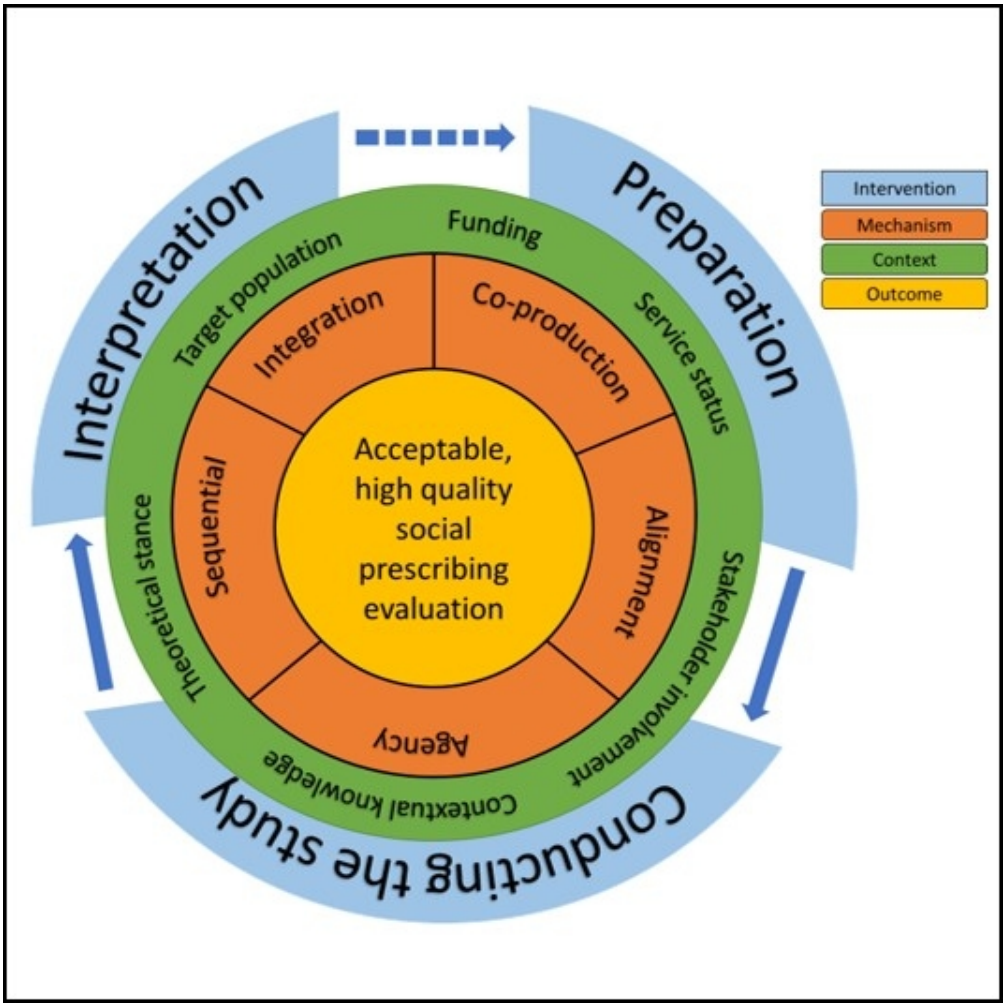

Figure 2. Initial programme theory for social prescribing evaluation.

45x45mm (300 x 300 DPI)

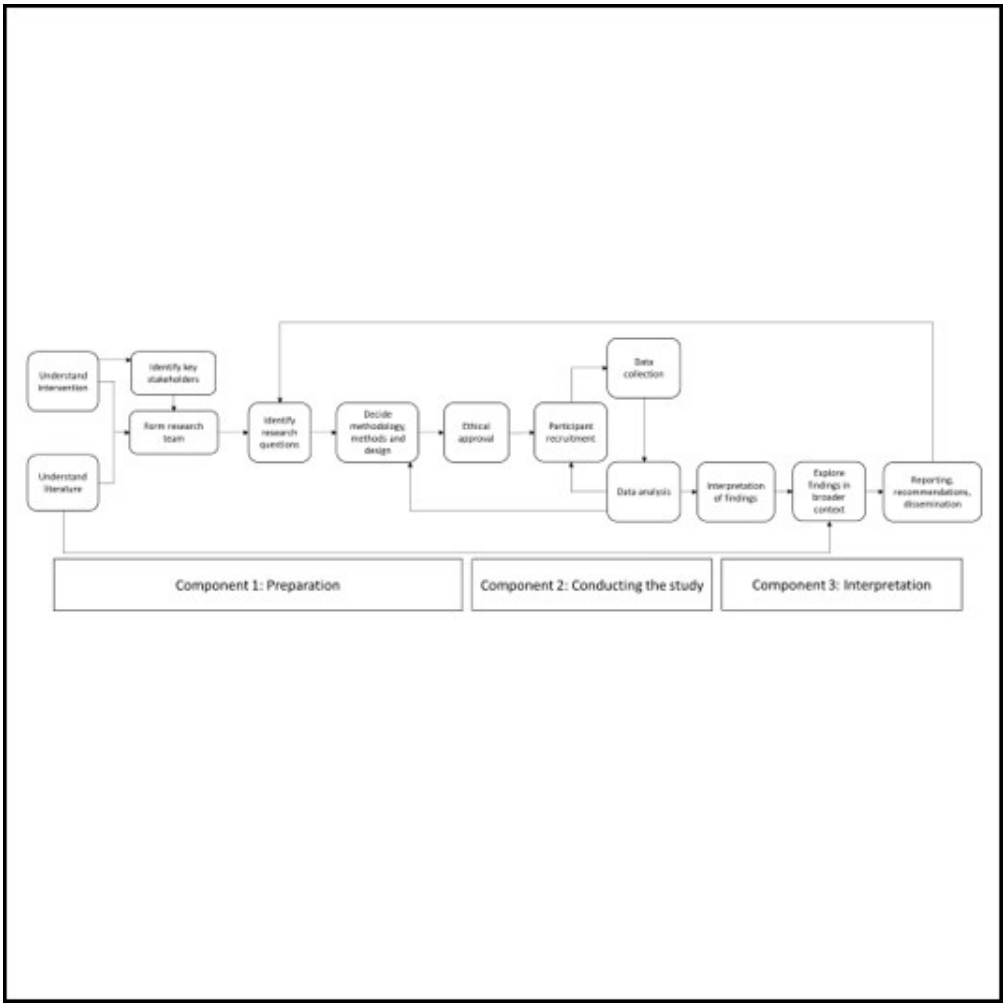

Figure 3. Refined programme theory for social prescribing evaluation.

45x45mm (300 x 300 DPI)

What methods for evaluating social prescribing work, for which intervention types, for whom, and in what circumstances? A protocol for a realist review

Protocol contributors: Megan Elliott & Prof Carolyn Wallace

On behalf of the Wales School for Social Prescribing Research

Part of the ACCORD study

A social prescribing evaluation framework & reporting standard study

Date: 06.05.2020, Version: 1.2

Contents

1.0. Introduction

1.1. Background

Social prescribing is a multi-dimensional concept of prevention and intervention with the potential to support population health and well-being within the health and social care sector (Moffatt et al., 2017). At present, there is no agreed definition of social prescribing in the UK (Carnes et al., 2017). Whilst in England, social prescribing is defined as *"a means of enabling GPs and other frontline healthcare professionals to refer to 'services' in their community instead of offering medicalised solutions"* (NHS England, 2018), models of social prescribing in the other three devolved nations (Wales, Scotland & Northern Ireland) are broader. In Wales, there are multiple models of social prescribing based in either primary care or the community facilitated by County Voluntary Councils and other voluntary sector organisations (Rees et al., 2019). Roberts et al. (under review) define social prescribing as *"individuals being referred/self-referring to non-medical interventions run by a third-party organisation in order to contribute to their general health and well-being"*, but note the wide variety and complexity in the nature of social prescribing interventions. Most involve a referral to a link worker (also referred to as community connector, social prescriber, well-being co-ordinator), who has a 'what matters' conversation with the person, co-produces goals/plans, and refers them to third sector/community group interventions and professionals for support and activities. Recent peer-reviewed SP literature addresses social isolation/loneliness, cancer, social capital, music, farming, web-based interventions, exercise and the Arts (Carnes et al, 2017; Pilkington et al, 2017; Price et al, 2017). This extends beyond common/traditional reasons for SP referrals, i.e. physical and mental health, well-being, social isolation, lifestyle change, self-care, long-term conditions self-management, social welfare advice, financial advice, work, training and learning (Steadman et al, 2017).

Social prescribing interventions are complex (Tierney et al., 2020; Roberts et al., under review). These interventions involve multiple stakeholders, multiple referral pathways, large variability between programme structure, intervention type, staff responsibilities, a broad target patient group and a range of outcome variables. As such, evaluating social prescribing interventions is challenging and to date the literature supporting the efficacy of social prescribing is weak (Bickerdike et al., 2017; Roberts et al., under review). In addition, there are a number of gaps in the social prescribing evaluation literature which include the need to understand and develop;

- Comparisons between referral pathways, utility of models, 'transferring patients' (Husk et al, 2016), the process of SP,
- Data describing community intervention referral, contact and uptake (Carnes et al, 2017),
- Management information, baseline measures for evaluation, characteristics of people receiving SP versus non-engagers,
- The resources required within primary care to deliver SP (e.g. advocacy, employability),
- Funding mechanisms and impact of austerity measures and the Covid-19 pandemic on community assets (Dayson, 2017),
- Cross-sector communication within the SP process, translating research findings into implementation processes, combining individual satisfaction with both generic and specific context outcomes, reporting guidelines, standardisation of reporting evaluation (Cawston, 2011; Pilkington et al, 2017; Bickerdike et al, 2017).

Success and appropriateness of methodologies, methods and designs to evaluate social prescribing and address these gaps in the evidence likely depend on the context and circumstances within which they are employed. The Magenta Book (HM Treasury, 2020) highlights the importance of evaluation for commissioning, design, development and delivery of policies and interventions. According to the Magenta book, "*a good evaluation is useful, credible, robust, proportionate and tailored around the needs of various stakeholders*". Systematic reviews of the social prescribing literature have highlighted the lack of rigour and high risk of bias in social prescribing evaluations to date (Bickerdike et al., 2017; Roberts et al., under review). These reviews call for a coordinated framework for evaluating social prescribing interventions, in order to strengthen the evidence base and determine how social prescribing may have an impact upon people's health and well-being.

In response, researchers at the Wales School for Social Prescribing Research (WSSPR) have been commissioned by Health and Care Research Wales (HCRW) to develop a social prescribing evaluation methodology. More information about WSSPR can be found at www.wsspr.wales. WSSPR employs a translational research model (Cooksey et al., 2006; Weeks et al., 2013) to describe, order and organise the programme of research, by promoting equal and mutually supporting relationships between theory-building, knowledge acquisition and practice, without privileging any one activity. This is done through co-production between researchers, citizens and communities of practice and this co-productive approach will be taken throughout the development of the social prescribing evaluation methodology.

The first stage in this programme of research involves a review of the existing published and unpublished literature around social prescribing evaluation. Conclusions from the realist review will inform future stages of the programme of research, which will include using consensus methods to develop a social prescribing evaluation framework and virtual commissioning to test the framework in simulation and in practice.

A realist review approach was chosen as the most appropriate for a number of reasons;

1. *The complex nature of social prescribing:* The realist approach accepts complexity and seeks to explain the underlying mechanisms as to how a complex programme will work. In this context, the varied and complex nature of social prescribing means that different evaluation methodologies may be more appropriate and useful in certain circumstances and contexts, whilst other methodologies will be more appropriate in other circumstances and contexts. Understanding the mechanisms underpinning these relationships will support development of a framework that can be applied and adapted to a diverse range of social prescribing interventions and models.
2. *The scope of resources:* Realist reviews tend to be more inclusive than traditional systematic reviews and enable gathering and inclusion of a broader range of information sources (Husk et al., 2016). Realist reviews employ purposive search strategies, which seek to access information which will be relevant to the research questions but may not be identified through traditional search strategies of the published literature (Pawson et al., 2005). Due to the community-based nature of social prescribing, there will be a wealth of evaluation documentation and reports in the unpublished grey literature, which will be able to offer insight into good practice evaluation methodology and the considerations required when developing an evaluation methodology for use in social prescribing. Therefore, this review will gather data from searching the published

literature, the grey literature, and sharing a request for public documents and reports received from members of the Wales Social Prescribing Research Network.

3. *The realist approach to quality appraisal:* In contrast to systematic reviews which scrutinise methodological quality and risk of bias, realist reviews take a difference stance on judgment of research quality. (Pawson et al., 2005). The realist review rejects the hierarchical approach to assessing research quality, and instead believes that inclusion of a variety of methods is key to understanding the full picture. Therefore, the realist approach judges studies based on; (a) relevance to the research question and theory in question and (b) rigour of methodology to draw inferences from the data.

This realist review will explore evaluation methodology, methods and design that have been employed in the social prescribing published and unpublished literature to date. A realist review seeks to explore the mechanisms through which certain outcomes may occur as a result of particular contexts and circumstances (Pawson et al., 2005). The realist approach is underpinned by a generative model of causality, it proposes that in order to understand an outcome, the underlying mechanism and the context within which the outcome has occurred must be understood. This is defined in the form of a context (C), mechanism (M) and outcome (O) relationship; a CMO configuration.

In the context of the present review, the realist approach will enable researchers to explore why different methods of evaluating social prescribing interventions do (or do not) work, in certain circumstances (i.e. intervention types) for certain populations (e.g. people taking part in intervention (age, condition, etc.) or people conducting the evaluation (academics, management, prescribers)).

1.2. Review Objectives

Objective 1: To understand the different contexts within which social prescribing evaluations occur, including the settings in which social prescribing occurs (e.g. primary care, third sector, local authority), the elements of social prescribing (e.g. referral, link worker, community assets) and participant demographics (e.g. health status, age).

Objective 2: To explain the mechanisms underpinning why certain designs, methodologies & methods work or do not work for certain circumstances.

Objective 3: To explain which stakeholders are affected by different designs, methods and methodologies.

Objective 4: To explain the impact of these different designs, methods and methodologies on social prescribing evaluation.

Objective 5: To understand the programme theory by which these designs, methods & methodologies work or do not work for social prescribing evaluation.

Objective 6: To identify principles for good practice in social prescribing evaluation design, method & methodology.

1.3. Research Questions

1. When do the differing social prescribing evaluations occur? [different stages, different types, demographics, nature of the context]
2. Why do certain evaluation designs, methods & methodologies work or not work for different social prescribing evaluation?
3. For whom (evaluators, commissioners, recipients) do the different designs, methods and methodologies used for social prescribing work?
4. To what extent do the designs, methods and methodologies used for social prescribing evaluation work?
5. How do these designs, methods & methodologies work or not work for social prescribing evaluation?

1.4. Purpose of the review

The purpose of this realist synthesis is to identify principles of good practice in social prescribing review and evaluation. Future research will then consider the extent to which these principles have been followed and published and consider how rigour and existing methods could be improved. Using consensus methods, researchers will work with stakeholders (third sector, primary care, local authority, policy makers, statutory organisations, academics) to develop a framework for social prescribing evaluation. This will be disseminated in research and practice for use in social prescribing evaluation to improve evaluation rigour, thus strengthening the evidence base around social prescribing.

2.0. Methods & Analysis

2.1. Chosen methodology

A realist review takes an iterative and multi-stage approach to searching the literature. Pawson (2006) specified five steps to a realist review, which should be undertaken in an iterative, non-linear manner. This approach will be supplemented with additional approaches to provide more detail and depth around the search strategy, data extraction, analysis and synthesis (Pawson et al., 2005; Ford et al., 2016; Husk et al., 2016; Davies et al., 2017; North et al., 2018; Tierney et al., 2020).

These steps will be followed in the present review:

1. *Identify the review questions (Section 1.3):* Five research questions framed in realist terms to identify when, why, for whom, to what extent and how designs, methods and methodologies work for social prescribing evaluation.
2. *Searching for primary studies (Section 2.2):* Employing a four-phase iterative approach *(Pawson et al., 2005):*
    a. *Background search:* An initial scoping search to identify sources of evaluation and resources, identify key search terms and search strategies employed in published systematic and realist reviews of the same topic area.
    b. *Progressive focusing to identify programme theories:* Explore the background literature to identify initial programme theories and determine the scope of the review.
    c. *A search for empirical evidence to test a subset of these theories:* Engaging a variety of search strategies, including database searching, searching grey literature, backward and forward citation searching, requesting materials from the Wales Social Prescribing Research Network, to gather the database of resources to be included in the review.
    d. *A final search once the synthesis is almost complete:* Identify additional studies based on CMO configurations and programme theories developed from original analysis.
3. *Study selection (Section 2.3)*: Using an abstract screening tool a multi-stage, multi-reviewer (Husk et al., 2016; Tierney et al., 2020) study selection phase will take place to determine the final selection of documents to be included in the review.
4. *Quality appraisal (Section 2.5)*: Establish the relevance to the research question and theory and the rigour of the methodology to draw inferences from the data.
5. *Extracting the data (Section 2.6):* Extract data using NVivo to code data according to four questions set out by Ford et al. (2016).
6. *Synthesis (Section 2.7):* Search for causal inferences and programme theories from CMO configurations and themes, guided by an approach used by North et al. (2018).

2.2. Search strategy

2.2.1. Databases

A range of sources will be searched to access a breadth of evaluation reports and materials:

Literature type	Search method
Published literature (international)	ASSIA, CINAHL, Embase, Medline, PsycInfo, PubMed, Scopus Online, Social Care Online, Web of Science
Grey literature (Wales only)	Local authority websites, third sector websites, NHS websites, Primary Care One, CVCs, WCVA, university websites, 'OpenGrey'

Call for materials (Wales only)	Request materials (See Appendix A) from the Wales Social Prescribing Research Networks to include; materials they are using, reports, etc. Requests to contacts in the Wales School for Social Prescribing Research for contacts/resources. Request to WSSPR steering group to identify key evaluations to be included.

2.2.2. Search terms

Search term	Alternatives
Social prescribing	• Social prescriber, social prescription, social capital, social referral • Link worker, link navigator, link coordinator, link co-ordinator • Community connect*, community refer*, community coordinator, community co-ordinator, community navigator, community champion* • First contact practitioner • Parish organiser • Local area co-ordinator, local area coordinator
Community	Community asset, primary care, third sector, charity, public health, community group, social enterprise, local asset, housing, housing association, housing sector, social business*, social value organisation, voluntary sector, projects, arts, outdoor, dance, green, woodland, welfare, activ*, social capital, community benefit, social benefit, community resilience
Evaluation	Monitor*, review*, evaluat*, outcome*, impact, implication, evidence, cost, analysis, process, cost-effective, cost consequence, social value, investment, cost-benefit analysis, indicator, return on investment, tool, scale, quality indicator, effect*

2.2.3. Study inclusion criteria

The review will include evaluation of any component of the social prescribing pathway, i.e. the referral, the link worker process, engagement with the community assets or third sector. The evaluation does not need to describe the entire social prescription process in order to be included, however it must be clear that the intervention is linked to a social prescribing pathway (e.g. referrals must be received from a social prescriber).

Component	Inclusion	Exclusion
Intervention	Clear link to the social prescribing pathway. A community asset must have received referrals from a link worker*. Intervention includes primary care, third sector and private sector organisations.	Evaluations which do not mention the "link worker*" process Community asset independent of social prescribing.

Referrer	Primary care setting Community healthcare provider Third sector Self-referral	Self-referral direct to a community asset without link worker.
Participant group	Participants age 18 years. Any physical or mental health condition.	People under age 18 years.
Design	All evaluation & monitoring designs. Process, implementation & outcome evaluations.	Studies where evaluation/monitoring design is not described or defined in sufficient detail. Studies which do not involve an evaluation of a social prescribing intervention.
Document	Peer-reviewed articles Grey literature PhD, MPhil & MRes reports Unpublished evaluation reports Organisational reports Posters Case studies Indicators Terms of Reference Operating procedures Guidelines Systematic reviews Realist reviews	Editorials, opinion articles, communications, protocols Scoping review, literature review
Outcomes	Individual level Organisation level System level	
Location & language	Published literature – international Grey literature - Wales only English & Welsh language only.	
Date	Papers published 1 January 1998 (start of devolution) to 31 May 2020	

2.3. Study selection

In the first instance, titles will be screened by reviewer 1 (ME) for basic relevance and any titles deemed irrelevant will be excluded at this stage. An abstract screening tool developed by the researchers will be used to screen all remaining abstracts to determine whether they meet the inclusion criteria (see Appendix B). The abstract screening tool will be pilot tested by two reviewers prior to use. Where it is unclear (abstract classified as 'amber') whether the document meets the inclusion criteria from the abstract, the full text will be screened.

Characteristics of documents which were reviewed will be recorded in an Excel file. A random sample of 10% of the citations will also be reviewed by a second reviewer to establish consistency in application of the inclusion and exclusion criteria (Tierney et al., 2020).

Two reviewers will review all remaining full text documents to establish the final dataset of documents (Husk et al., 2016). Full-text documents will be stored and coded using NVivo 11. Any disagreements will be resolved through discussion with the review expert advisory group.

2.4. Data management

Exported files from database searching will be imported to EndNote reference manager and combined with search results from the grey literature and data collected from the request to the network. Files will be reviewed and duplicates will be removed. Quality appraisal forms (section 2.5) will be attached to the references on EndNote. Articles will be numbered and article numbers will be used to identify CMO origins.

PRISMA guidelines will be used to record searches.

A reflective diary will be kept by both reviewers to note reasons for inclusions/exclusions and queries to discuss with other reviewers.

Following study selection, the final set of materials will be uploaded to NVivo 11 software for analysis. The review team will use NVivo 11 to note take and annotate the documents.

Data will be labelled according to the source, for transparency for the review team and later publication (Davies et al., 2017):

- First order – data extracted directly from participant statements
- Second order – data extracted from the study authors' interpretation
- Third order – the reviewers interpretations of participant and author statements

2.5. Quality assessment

As per realist review guidelines, documents will be appraised based on relevance to the research questions and programme theories, and an assessment of rigour and the potential of bias. In this review, a realist synthesis appraisal form (Appendix C) will be used to appraise each full text paper. The appraisal tool will be pilot tested by two reviewers prior to use. This tool will also be used to initially extract key elements from the document which can specifically address research questions.

Appraisal of studies will be undertaken independently by two reviewers, with disagreements resolved through consultation with the advisory group.

2.6. Data Extraction

Data will be coded both inductively, in which codes originate from the review documents, and deductively, in which codes originate from theories, based on emerging concepts. This coding will be done iteratively. Ford et al (2016) recommend coding based on a series of questions:

1. Is the extracted data referring to a context, mechanism or outcome?
2. What is the partial or complete CMO configuration (CMOC) from this data?

3. How does this CMOC relate to social prescribing evaluation?
    a. Are there data in the document which support how the CMOC relates to social prescribing evaluation?
    b. In light of the CMOC and supporting data, does the programme theory for social prescribing evaluation need to be changed/amended?
4. Is the evidence sufficiently trustworthy and rigorous to change the CMOC or programme theory?

Extracted data will likely relate to details of intervention, details of evaluation methods, methodology and design employed, details of participants, setting/provider, outcomes, evaluator.

2.7. Data synthesis

Synthesis refers to the process of seeking explanation (Pawson et al., 2005). The data synthesis process aims to refine the programme theory by determining what works, for whom, in what circumstances, to what extent and why (Rycroft-Malone et al., 2012). The data synthesis approach for this review will follow the process set out by North et al. (2018) which was guided by the Wong & Papoutsi (2016) and Miles and Huberman (2014) approach. Following data extraction and quality appraisal, three reviewers (R1, R2 and R3) will be involved in a data synthesis process:

Based on the documents that are identified, documents will be divided into sub-groups for the first stage of the synthesis. The nature of these sub-groups will be determined by the content of the documents, e.g. sub-groups may refer to different stages of the social prescribing pathway, different evaluation processes or different social prescribing themes. All reviewers will be involved in agreeing the nature of document sub-groups.

Data synthesis will continue within each of these sub-groups. This will involve R1 identifying common themes throughout the documents in the sub-group and building CMOCs within these themes. R2 will double code 20% of the data to identify possible CMOCs. R1 and R2 will discuss and agree codes, with the support of R3 where there are disagreements in coding. From the constructed CMOCs, if-then statements will be created by R1 and R2 together, in relation to the research questions specified for the review. Inferences will then be drawn about the programme theory.

Data and inferences drawn within each of the sub-groups will then be integrated and triangulated. A final set of CMOCs and 'if-then' statements will be collated and meta-inferences will be drawn out by the three reviewers. Origin of CMOC will be identified, and the quality of the sources to support the CMOCs will be examined (i.e. did they originate in peer-reviewed documentation, was the design deemed rigorous?). The conclusions at this stage will be presented to the Expert Advisory Group (Section 3.0) for their comment.

At the end of this synthesis process, principles of good practice in evaluating social prescribing will be identified for academics and practitioners, within the context of the five research questions. Recommendations for social prescribing evaluation and implementation will be shared and recommendations for future research will then be highlighted.

The process of this synthesis may be modified and amended throughout the review process, any modifications will be discussed in the final report and publication.

The findings and draft conclusions from the realist review will be shared with the Wales School for Social Prescribing Research, including the steering group, international advisory board, network and

Communities of Practice for consultation. This will help determine the next steps for developing the evaluation methodology framework for social prescribing.

3.0. Protocol development

The protocol for this realist review was shared with members of the Wales School for Social Prescribing Research (WSSPR) steering group and the Expert Advisory group convened for this group (see below). Comments were received via e-mail and during the WSSPR May 2020 steering group. Amendments to the protocol were made accordingly. The WSSPR steering group will continue to receive updates and be involved with the review process across the course of the review.

3.1 Public engagement

The protocol will be presented to the PRIME Centre Wales SUPER public & patient involvement group on 03.06.2020. The aim of this will be to engage with members of the public and understand their views and thoughts around the search, the protocol and the next steps going forward.

The PPI representative for WSSPR also reviewed the protocol in full and shared comments which were integrated into the protocol. He will also be part of the Expert Advisory Group and will guide theory building and interpretation of findings.

3.2 Expert Advisory Group

An expert advisory group will be convened to check approaches to the realist review, aid programme theory development, validate findings and suggest alternative sources of information. The group will meet virtually two times over the six-month duration of the realist review. The group may also be consulted via e-mail at additional points during the review. Experts in both the methodology (realist synthesis), the study area (social prescribing evaluation) and local Welsh social prescribing knowledge will be invited to participate.

Name	Organisation	Relevant expertise
Lyndsey Campbell-Williams	Medrwn Mon (CoP representative)	Social prescribing & evaluation in practice.
Julie Davies	Bridgend County Borough Council	Social prescribing & community interventions
Mair Edwards	Grwp Cynefin (CoP representative)	Social prescribing & evaluation in practice.
Megan Elliott	University of South Wales/ PRIME Centre Wales	Senior research assistant for the WSSPR; trained in Realist Synthesis methods.
David Humphreys	Birmingham University / Stort Valley & Villages Primary Care Network	Social prescribing; realist synthesis methods.
Prof Mark Llewellyn	University of South Wales/ WIHSC/PRIME Centre Wales	Evaluation methodology for social prescribing
Dr Mary Lynch	Bangor University/CHEME	Evaluation methodology for social prescribing; social return on investment
Dr Sally Rees	Wales Council for Voluntary Action	Third sector & social prescribing; realist review & evaluation methods

Dr Glynne Roberts	Betsi Cadwaladr University Health Board	Social prescribing engagement with practitioners through Community of Practice
Andrew Rogers	Bangor University	Community development, realist review & evaluation methods
Roger Seddon	PPI representative	Social prescribing from public perspective, third sector, community resilience
Sara Thomas	Public Health Wales	Social prescribing from public health perspective
Josep Vidal-Alaball	Gerència Territorial Catalunya Central| Institut Català de la Salut	International perspective on social prescribing, evaluation & reporting.
Prof Carolyn Wallace	University of South Wales/ PRIME Centre Wales	Director of WSSPR; trained in Realist Synthesis methods.

A terms of reference has been drafted for the advisory group (Appendix D). These will be agreed in the first meeting of the expert advisory group.

The focus of meeting 1 will be to develop the Initial programme theory. The focus of meeting 2 will be to review and comment on the findings.

4.0. Dissemination

The realist review protocol has been uploaded to PROSPERO, registration CRD42020183065.

A full report of the findings will be written up, to be shared with the expert advisory group, the Wales School for Social Prescribing Research Steering Group, the Wales School for Social Prescribing Research International Advisory Board and the Wales Social Prescribing Research Network & Communities of Practice.

Following consultation with these advisory groups, a final report will be produced. Findings will also be submitted for publication in an open access, peer-reviewed journal. Publication write up will follow the RAMESES publication guidelines (Wong et al., 2013).

Findings will also be presented at a research conference. A user-friendly summary of the findings will be prepared and disseminated through the Wales Social Prescribing Research Network. Findings will also be shared with the PRIME Centre Wales and Health and Care Research Wales networks.

The findings from this realist review will feed into the next steps of the project, which will involve using consensus methods to develop a social prescribing evaluation framework with stakeholders and develop reporting standards for social prescribing evaluations.

5.0. References

Bickerdike, L., Booth, A., Wilson, P.M., Farley, K. and Wright, K., 2017. Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ open*, *7*(4), p.e013384.

Carnes, D., Sohanpal, R., Frostick, C., Hull, S., Mathur, R., Netuveli, G., Tong, J., Hutt, P. and Bertotti, M., 2017. The impact of a social prescribing service on patients in primary care: a mixed methods evaluation. *BMC health services research*, *17*(835), p.1-9. DOI 10.1186/s12913-017-2778-y

Cawston, P., 2011. Social prescribing in very deprived areas. *Br J Gen Pract*, *61*(586), pp.350-350.

Cooksey D., 2006. A Review of UK Health Research Funding. HM Treasury, London.

Davies, F., Wood, F., Bullock, A., Wallace, C. and Edwards, A., 2017. Interventions to improve the self-management support health professionals provide for people with progressive neurological conditions: protocol for a realist synthesis. *BMJ open*, *7*(3), p.e014575.

Dayson, C., 2017. Social prescribing 'plus': a model of asset-based collaborative innovation?. *People, Place and Policy*, *11*(2), pp.90-104.

Ford, J.A., Wong, G., Jones, A.P. and Steel, N., 2016. Access to primary care for socioeconomically disadvantaged older people in rural areas: a realist review. *BMJ open*, *6*(5), p.e010652.

HM Treasury, March 2020. Magenta Book. Central Government Guidance on Evaluation. London: HM Treasury. Accessed from: https://www.gov.uk/government/publications/the-magenta-book on 29.04.2020.

Husk, K., Blockley, K., Lovell, R., Bethel, A., Bloomfield, D., Warber, S., Pearson, M., Lang, I., Byng, R., Garside, R., 2016. What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. Systematic Reviews 5:93.

Miles, M. & Huberman, A., 2014. Qualitative Data Analysis: A methods Sourcebook. 3rd Ed. Thousand Oaks. SAGE Publications.

Moffatt, S., Steer, M., Lawson, S., Penn, L. and O'Brien, N., 2017. Link Worker social prescribing to improve health and well-being for people with long-term conditions: qualitative study of service user perceptions. *BMJ open*, *7*(7), p.e015203.

North, R., Anderson, P., Harris, S., Kenkre, J., Wallace, S., Wallace, C. 2018. Wet Age Related Macular Degeneration Services in the Community – pathfinder evaluation. Report.

NHS England, 2018. Social Prescribing, *as cited in* CordisBright, 2019, What works in social prescribing? Accessed from https://www.cordisbright.co.uk/admin/resources/08-hsc-evidence-reviews-social-prescribing.pdf on 15.03.2019.

Pawson, R., 2006. Evidence-based policy: a realist perspective. Sage: London.

Pawson, R., Greenhalgh, T., Harvey, G. and Walshe, K., 2005. Realist review-a new method of systematic review designed for complex policy interventions. *Journal of health services research & policy*, *10*(1), pp.21-34.

Pilkington, K., Loef, M.,Polley, M., 2017. Searching for Real-World Effectiveness of Health Care Innovations: Scoping Study of Social Prescribing for Diabetes. J Med Internet Res;19(2):e20

Price, S., Hookway, A., King, S., 2017. Social prescribing evidence map: technical report. Public Health Wales Observatory. Primary & Community Care Development and Innovation Hub. Public Health Wales NHS Trust.

Rees, S., Thomas, S., Elliott, M., Wallace, C. 2019. Creating sustainable community assets/social capital within the context of social prescribing: Findings from the workshop held 17/07/19. Report.

Roberts, T., Erwin, C., Pontin, D., Williams, M., Wallace, C., under review. Social prescribing and complexity theory: A systematic review.

Steadman, K., Thomas, R., Donnaloja, V., 2017. Social Prescribing. A pathway to work? Work Foundation www.theworkfoundation.com.

The All Wales Social Prescribing Research Network (WSPRN): Wales Council For Voluntary Action, 2019. Accessed from: https://wcva.cymru/influencing/the-social-prescribing-research-network/ on 24.04.2020.

Tierney, S., Wong, G., Roberts, N., Boylan, A.M., Park, S., Abrams, R., Reeve, J., Williams, V. and Mahtani, K.R., 2020. Supporting social prescribing in primary care by linking people to local assets: a realist review. *BMC medicine*, *18*(1), pp.1-15.

Weeks KW, Sabin M, Pontin D, Woolley N (2013) Safety in numbers: An introduction to the nurse education in practice series. Nurse Education in Practice 13 (2013) e4ee10.

Wong, G. & Papoutsi, C. (2016). Data analysis process. Data analysis - realist evaluations. Nuffield Department of Primary Care Health Sciences. University of Oxford.

Wong, G., Greenhalgh, T., Westhorp, G., Buckingham, J., Pawson., 2013. RAMESES publication standards: realist syntheses. *BMC Medicine; 11*(21).

6.0. Appendices

A: Request to members of the Wales Social Prescribing Research Network for public facing evaluation documents (to be shared in English & Welsh)

Dear all,

As you know, the Wales School for Social Prescribing Research (WSSPR) was launched on 1st April 2020. One of the aims of WSSPR is to develop an evaluation framework for social prescribing. Our first step to achieving this involves a literature review, to find out what social prescribing evaluations have been completed, how they were done, what is reported and how these findings are shared.

So, we need your help!

Please could you send any **public facing evaluation documents** from your social prescribing service or organisation to wsspr@southwales.ac.uk. These could include reports, leaflets, posters, presentations, publications, terms of reference, operating procedures or anything else that you think would be relevant.

We are going to combine the reports that you share with us with international literature, to review what is currently being done, and draw out best practice for social prescribing evaluation.

Please send these documents to wsspr@southwales.ac.uk by Friday 29th May 2020.

Many thanks in advance,

Megan Elliott

Senior Research Assistant for WSSPR

Annwyl bawb,

Fel y gwyddoch, lansiwyd Ysgol Ymchwil Rhagnodi Cymdeithasol Cymru (WSSPR) ar 1 Ebrill 2020. Un o nodau WSSPR yw datblygu fframwaith gwerthuso ar gyfer rhagnodi cymdeithasol. Mae ein cam cyntaf tuag at gyflawni hyn yn cynnwys adolygiad llenyddiaeth, i ddarganfod pa werthusiadau rhagnodi cymdeithasol sydd wedi'u cwblhau, sut y cawsant eu gwneud, yr hyn a adroddir a sut mae'r canfyddiadau hyn yn cael eu rhannu.

Felly, mae angen eich help arnom ni!

A allech chi anfon unrhyw ddogfennau gwerthuso sy'n wynebu'r cyhoedd o'ch gwasanaeth neu sefydliad rhagnodi cymdeithasol i wsspr@southwales.ac.uk. Gallai'r rhain gynnwys adroddiadau, taflenni, posteri, cyflwyniadau, cyhoeddiadau, cylch gorchwyl, gweithdrefnau gweithredu neu unrhyw beth arall a fyddai'n berthnasol yn eich barn chi.

Rydyn ni'n mynd i gyfuno'r adroddiadau rydych chi'n eu rhannu â ni gyda llenyddiaeth ryngwladol, i adolygu'r hyn sy'n cael ei wneud ar hyn o bryd, a llunio arfer gorau ar gyfer gwerthuso rhagnodi cymdeithasol.

Anfonwch y dogfennau hyn at wsspr@southwales.ac.uk erbyn dydd Gwener 29ain Mai 2020.

Diolch yn fawr ymlaen llaw,

Megan Elliott

Uwch Gynorthwyydd Ymchwil ar gyfer WSSPR

B: Abstract screening tool

Record number: _____

Reviewer: _____

Abstract Screening Tool

Title				
First author				
Year				
Source				
English/Welsh Language?	**Yes**		**No**	
Does the document specifically refer to a social prescribing pathway?	**Yes**		**No**	
Are participants over age 18 years?	**Yes**		**No**	
Are evaluation or monitoring design & methods described?	**Yes**		**No**	
Does the document report data (i.e. not opinion/protocols)?	**Yes**		**No**	
Can the document contribute to answering one of the research questions?	**Yes**		**No**	
Research design (circle):	**Systematic Review**	**RCT**	**Cohort**	**Case-control**
	Cross-sectional	**Case study**	**Other:**	
Research methodology:	**Quantitative**	**Qualitative**	**Mixed-method**	
Research methods:				
Further comments:				

Rating		
Green: *Include*	**Amber: *Read full text***	**Red: *Exclude***

C: Quality appraisal tool

Record number: _____

Reviewer: _____

Realist Review Appraisal Form

Title:		
First Author:	Year:	Project name (if any):
Companion Papers/Documents:		

Summary of paper (~3 bullet points): *What is this about? What kind of data source? Quant, Qual, Report, Blog, etc.*

Peer-reviewed literature	Grey literature – Government commissioned report	Grey literature – Local authority/ funder commissioned report	Grey literature – Public facing, not reviewed external to organisation	Unknown

Appraisal assessment: Usefulness and relevance of this study is:			
High	Moderate	Low	None
Papers that have high relevance – framing of research and research questions are highly matched to review questions, empirical findings are clearly described, rich description of process & context.	*Papers that have a moderately relevant framing to theories – report on different but related interventions, similar outcomes, describe middle-range theories, areas of interest, potential to populate CMOs.*	*Papers that met the inclusion criteria but little description of context and mechanism. Contains at least one idea or statement about the context, mechanisms or outcomes that can be used for refining theory & building CMOs.*	*Upon reading this paper the full-text paper does not correspond to the review questions, does not have any context that corresponds to programme theories or does not describe at all the context or mechanisms.*

What is interesting about this paper?
Relevance: *How relevant is this paper?* High | Moderate | Low | None *In what way is this document relevant to the candidate programme theories, if at all (include page, paragraph, line numbers)*
Rigour: *How rigorous is this paper?* High | Moderate | Low | None *What are the strengths and weaknesses of the article?*
Are there any connections between outcomes and processes (C + M = O) ? Are there any if-then statements? What are they? Please state 'NONE' if no evidence is identified.
Describe any unintended positive or negative outcomes and their potential mechanisms. Please state 'NONE' if no evidence is identified.
Describe the impact of these contexts, mechanisms and/or outcomes. Please state 'NONE' if no evidence is identified.
Type of social prescribing/social prescribing methods used (e.g. MI, coaching, what matters conversation).

Questions for the first author and research partners:
Citations identified as potentially appropriate for inclusion in the review:

D: Expert Advisory Group Terms of Reference

Name of group	Expert Advisory Group Realist review of social prescribing evaluation methodology
Summary of Role	Members of the Expert Advisory Group will bring their expertise in either social prescribing or realist reviews to guide and advise on the realist review entitled "What methods for evaluating social prescribing work, for which intervention types, for whom, and in what circumstances?"
Responsibilities	1. *To review, feedback and contribute to the development of the Realist Review, including commenting on CMO configurations, findings, conclusions and recommendations.* 2. *To act as a critical friend to the review team.*
Membership	Members to be confirmed
Meetings	The Expert Advisory Group will meet two times over the 6-month duration of the realist review. Further support may be requested via e-mail. Meeting duration will be 2 hours. Notice of the meeting will be circulated at least 2 weeks before. A draft agenda and corresponding documents will be circulated 1 week prior to the planned meeting.
Confidentiality	All documents are confidential and must not be shared or discussed with third parties unless specified.

Additional file 4: List of items required when reporting a realist synthesis (RAMESES checklist)

Reporting item		Description of item	Reported on page(s)
Title			
1		In the title, identify the document as a realist synthesis or review	Page 1
Abstract			
2		While acknowledging publication requirements and house style, abstracts should ideally contain brief details of: the study's background, review question or objectives; search strategy; methods of selection, appraisal, analysis and synthesis of sources; main results; and implications for practice	Page 2
Introduction			
3	**Rationale for review**	Explain why the review is needed and what it is likely to contribute to existing understanding of the topic area	Pages 4-6
4	**Objectives and focus of review**	State the objective(s) of the review and/or the review question(s). Define and provide a rationale for the focus of the review	Pages 6-7
Methods			
5	**Changes in the review process**	Any changes made to the review process that was initially planned should be briefly described and justified	Pages 6-7
6	**Rationale for using realist synthesis**	Explain why realist synthesis was considered the most appropriate method to use	Page 6
7	**Scoping the literature**	Describe and justify the initial process of exploratory scoping of the literature	Page 7
8	**Searching processes**	While considering specific requirements of the journal or other publication outlet, state and provide a rationale for how the iterative searching was done. Provide details on all of the sources accessed for information in the review. Where searching in electronic databases has taken place, the details should include, for example, name of database, search terms, dates of coverage and date last searched. If individuals familiar with the relevant literature and/or topic area were contacted, indicate how they were identified and selected	Pages 7-9, Supplementary materials 1 and 3
9	**Selection and appraisal of documents**	Explain how judgements were made about including and excluding data from documents, and justify these	Pages 8-9, Supplementary materials 1 and 3
10	**Data extraction**	Describe and explain which data or information were extracted from the included documents and justify this selection	Page 9

11	**Analysis and synthesis processes**	Describe the analysis and synthesis processes in detail. This section should include information on the constructs analysed and describe the analytic process	Page 9
Results			
12	**Document flow diagram**	Provide details on the number of documents assessed for eligibility and included in the review, with reasons for exclusion at each stage, as well as an indication of their source of origin (e.g. from searching databases, reference lists and so on). You may consider using the example templates (which are likely to need modification to suit the data) that are provided	Page 8, Figure 1
13	**Document characteristics**	Provide information on the characteristics of the documents included in the review	Pages 9-10, Supplementary file 2
14	**Main findings**	Present the key findings with a specific focus on theory building and testing	Pages 10-14
Discussion			
15	**Summary of findings**	Summarise the main findings, taking into account the reviews objective(s), research question(s), focus and intended audience(s)	Pages 14-17
16	**Strengths, limitations and future research directions**	Discuss both the strengths of the review and its limitations. These should include (but need not be restricted to) (a) consideration of all the steps in the review process and (b) comment on the overall strength of evidence supporting the explanatory insights which emerged The limitations identified may point to areas where further work is needed	Pages 17-18
17	**Comparison with existing literature**	Where applicable, compare and contrast the reviews findings with the existing literature (e.g. other reviews) on the same topic	Pages 14-17
18	**Conclusion and recommendations**	List the main implications of the findings and place these in the context of other relevant literature. If appropriate, offer recommendations for policy and practice	Pages 16-17 and 18-19
19	**Funding**	Provide details of funding source (if any) for the review, the role played by the funder (if any) and any conflicts of interests of the reviewers	Page 20

Additional file 1: Search strategy

DATABASES

Literature type	Search method
Published literature (international)	Medline, Embase, CINAHL, PsycInfo, ASSIA, Web of Science, Scopus Online, PubMed, Social Care Online
Grey literature (Wales only)	Local authority websites, third sector websites, NHS websites, Primary Care One, CVCs, WCVA, university websites, 'OpenGrey'
Call for materials (Wales only)	Request materials (See Appendix A) from the Wales Social Prescribing Research Networks to include; materials they are using, reports, etc. Requests to contacts in the Wales School for Social Prescribing Research for contacts/resources. Request to WSSPR steering group to identify key evaluations to be included.

SEARCH TERMS

Search term	Alternatives
Social prescribing	• Social prescriber, social prescription, social capital, social referral • Link worker, link navigator, link coordinator, link co-ordinator • Community connect*, community refer*, community coordinator, community co-ordinator, community navigator, community champion* • First contact practitioner • Parish organiser • Local area co-ordinator, local area coordinator
Community	Community asset, primary care, third sector, charity, public health, community group, social enterprise, local asset, housing, housing association, housing sector, social business*, social value organisation, voluntary sector, projects, arts, outdoor, dance, green, woodland, welfare, activ*, social capital, community benefit, social benefit, community resilience
Evaluation	Monitor*, review*, evaluat*, outcome*, impact, implication, evidence, cost, analysis, process, cost-effective, cost consequence, social value, investment, cost-benefit analysis, indicator, return on investment, tool, scale, quality indicator

SEARCH STRINGS

String 1 - "social prescribing" OR "social prescriber" OR "social prescription" OR "social referral" OR "link worker" OR "link navigator" OR "link coordinator" OR "link co-ordinator" OR "community connector" OR "community connection" OR "community referrer" OR "community referral" OR "community coordinator" OR "community co-ordinator" OR "community navigator" OR "community champion" OR "community champions" OR "first contact practitioner" OR "parish organiser" OR "local area co-ordinator" OR "local area coordinator"

String 2 – evaluat* OR monitor* OR review* OR outcome* OR impact OR implication OR evidence OR cost OR analysis OR process OR cost-effective OR "cost consequence" OR "social value" OR investment OR "cost-benefit analysis" OR indicator OR "return on investment" OR tool OR scale OR "quality indicator" OR effect*

String 3 – "Community asset" OR "primary care" OR "third sector" OR "charity" OR "public health" OR "community group" OR "social enterprise" OR "local asset" OR "housing" OR "housing association" OR "housing sector" OR "social business*" OR "social value organisation" OR "voluntary sector" "projects" OR "arts" OR "outdoor" OR "dance" OR "green" OR "woodland" OR "welfare" OR "activ*" OR "social capital" OR "community benefit" OR "social benefit" OR "community resilience"

String 3 (Ab) AND string 2 (Ab) AND String 1 (Full text)

INCLUSION CRITERIA

Component	Inclusion	Exclusion
Intervention	Clear link to the social prescribing pathway. A community asset must have received referrals from a link worker*. Intervention includes primary care, third sector and private sector organisations.	Evaluations which do not mention the "link worker*" process Community asset independent of social prescribing.
Referrer	Primary care setting Community healthcare provider Third sector Self-referral	Self-referral direct to a community asset without link worker.
Participant group	Participants age 18 years. Any physical or mental health condition.	People under age 18 years.
Design	All evaluation & monitoring designs. Process, implementation & outcome evaluations.	Studies where evaluation/monitoring design is not described or defined in sufficient detail. Studies which do not involve an evaluation of a social prescribing intervention.
Document	Peer-reviewed articles Grey literature PhD, MPhil & MRes reports Unpublished evaluation reports Organisational reports Posters Case studies Indicators Terms of Reference Operating procedures Guidelines	Editorials, opinion articles, communications, protocols
Outcomes	Individual level Organisation level System level	
Location & language	Published literature – international Grey literature - Wales only English & Welsh language only.	
Date	Papers published 1 January 1998 (start of devolution) to 31 May 2020	

Additional File 2: Descriptive characteristics of studies (n=83) included in the Realist Review

Author	Year	Country	Sub-case	Intervention type	Study method/design	Evaluators	Appraisal
Age Connect Cardiff & the Vale [54]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	Uncontrolled before-and-after design and qualitative survey feedback	In-house evaluation	Low
Age Connect Cardiff & the Vale [55]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	End of year reporting, monitoring data	In-house evaluation	Low
Age connect Cardiff & the Vale [56]	2017	Wales	Mixed Methods (grey)	Volunteer support programme targetting isolation	Uncontrolled before-and-after design and qualitative survey feedback	In-house evaluation	Low
Bangor University [57]	2019	Wales	Mixed Methods (grey)	The Health Precint, referral via social prescribing	Uncontrolled before-and-after design, interviews with staff	Independent research team	Moderate
Jones, Lynch [58]	2019	Wales	Mixed Methods (grey)	Time Credits, time based community support	Uncontrolled before-and-after design, document analysis of patient notes, interviews, focus groups, reflective diaries	Independent research team	Low
Bertotti, Frostick, Hutt, Sohanpal, Carnes [59]	2018	England	Mixed Methods	Social prescribing with social prescribing coordinators	Realist evaluation including GP surveys, interviews with stakeholders and observations	Independent research team	High
Bickerdike, Booth, Wilson, Farley, Wright [1]	2017	England	Reviews	Social prescribing	Systematic review	Independent research team	Moderate
Bird, Biddle, Powell [60]	2019	England	Mixed Methods	CLICK into activity, community based physical activity	Mixed methods evaluation using RE-AIM framework with uncontrolled before-and-after design questionnaires, interviews and	Independent research team	Moderate

					programme-related documentation.		
Campbell, Winder, Richards, Hobart [61]	2007	England	Quantitative	Welfare advice services	Longitudinal postal survey	No description of research team	High
Carnes, Sohanpal, Frostick, Hull, Mathur, Netuveli, Tong, Hutt, Bertotti [9]	2017	England	Mixed Methods	Social prescribing pilot	Patient surveys with matched control groups, interviews with service users	Independent research team	High
Chatterjee, Camic, Lockyer, Thomson [62]	2018	England	Reviews	Social prescribing (non-clinical community interventions)	Systematic review	Independent research team	Moderate
Cheetham, Van der Graaf, Khazaeli, Gibson, Wiseman, Rushmer [63]	2018	England	Mixed Methods	Integrated wellness service	In-depth semi-structured interviews with service users, focus groups with service-users and non-service users and routine monitoring data	No description of research team	Moderate
Craig, Booth, Hall, Story, Hayward, Goodburn, Zumla [64]	2008	England	Mixed Methods	Tuberculosis link worker	Cohort process evaluation and interviews with service providers	Mixed research team, researchers became stakeholders in project	Low
Crone, Sumner, Baker, Loughren, Hughes, James [65]	2018	England	Quantitative	Arts on Prescription	Uncontrolled before-and-after design	No description of research team	Moderate
Cwm Taf UHB [66]	2015	Wales	Mixed Methods (grey)	Social prescribing for healthy lifestyles	Literature review, survey, semi-structured interviews	In-house evaluation	Low
Dayson [67]	2017	England	Mixed Methods	Social innovation pilot in the community	Service evaluation with uncontrolled before-and-after design and interviews with patients, carers, commissioners and providers	Independent research team	High

Dayson, Painter, Bennett [68]	2020	England	Qualitative	Holistic social prescribing with link worker	Qualitative case study with three nested case studies; semi-structured interviews with commissioners, providers and patients	No description of research team	Moderate
Elston, Gradinger, Asthana, Lilley-Woolnough, Wroe, Harman, Byng [69]	2019	England	Quantitative	Holistic well-being co-ordinator service	Uncontrolled before-and-after design	Mixed research team	High
Grayer, Cape, Orpwood, Leibowitz, Buszewicz [70]	2008	England	Quantitative	Graduate Primary Care Community Link scheme	Uncontrolled before-and-after design	Independent research team	Low
Grow Well [71]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Uncontrolled before-and-after design, feedback, case studies, monitoring data analysis	In-house evaluation	Low
Grow Well [72]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Uncontrolled before-and-after design, survey	Independent research team	Moderate
Hanlon, Gray, Chng, Mercer [73]	2019	Scotland	Qualitative	Links Worker Programme, social prescribing to target negative impacts of the social determinants of health	Semi-structured interviews with service users	Independent research team	Moderate
Hassan, Giebel, Khedmati Morasae, Rotheram, Mathieson, Ward, Reynolds, Price, Bristow, Kullu [74]	2020	England	Qualitative	Life Rooms, social prescribing to address the social determinants of mental health	Semi-structured focus groups with service users	Mixed research team including PPI	Moderate
Heijnders, Meijs [75]	2018	Netherlands	Qualitative	Holistic social prescribing with link worker	Semi-structured, in-depth interviews with service users	Mixed research team	Low

Holding, Thompson, Foster, Haywood [76]	2020	England	Qualitative	Social prescribing targetting loneliness with link workers	Semi-structured interviews with staff and volunteers	Independent research team	Moderate
Husk, Blockley, Lovell, Bethel, Lang, Byng, Garside [77]	2019	England	Reviews	Social prescribing	Realist review	Independent research team	Low
Irvine, Marselle, Melrose, Warber [78]	2020	Scotland	Mixed Methods	Nature-based intervention	Feasibility study, uncontrolled before-and-after design, interviews with service users	Mixed research team	Low
Jarrett, Thornicroft, Forrester, Harty, Senior, King, Huckle, Parrott, Dunn, Shaw [79]	2012	England	Quantitative	Critical Time Intervention to support mentally-ill prisoners post release (social, clinical, housing and welfare services)	Pilot Randomised Controlled Design	Mixed research team	Moderate
Jensen [80]	2019	Denmark	Qualitative	Arts on Prescription	Semi-structured interviews with service users	No description of research team	Low
Jensen, Bonde [81]	2018	Denmark	Reviews	Arts on Prescription	Literature review	Independent research team	Low
Jensen, Torrissen [82]	2019	Denmark	Qualitative	Arts on Prescription	Semi-structured interviews with service users	No description of research team	Low
Kellezi, Wakefield, Stevenson, McNamara, Mair, Bowe, Wilson, Halder [83]	2019	England	Mixed Methods	Social prescribing	Semi structured interviews and longitudinal survey	No description of research team	Moderate
Kilgarriff-Foster, O'Cathain [84]	2015	England	Reviews	Social prescribing	Literature review	Independent research team	Low
Kingstone, Bartlam, Burroghs, Bullock, Lovell, Ray, Bower, Waheed, Gilbody,	2019	England	Qualitative	Tailored social prescribing, behavioural activation	Semi-structured interviews with older people and support workers; interviews or focus groups with GPs	Mixed research team	High

Nicholls, Chew-Graham [85]							
Lloyd-Evans, Frerichs, Stefanidou, Bone, Pinfold, Lewis, Billings, Barber, Chhapia, Chipp, Henderson, Shah, Shorten, Giorgalli, Terhune, Jones, Johnson [28]	2020	England	Mixed Methods	Community Navigator programme	Feasibility randomised controlled trial with semi-structured qualitative interviews with participants, Community Navigators and other stakeholders.	Mixed research team	High
Loftus, McCauley, McCarron [86]	2017	Northern Ireland	Quantitative	Social prescribing pathway	Uncontrolled before-and-after design	Mixed research team	Low
Mantell Gwynedd [87]	2018	Wales	Mixed Methods (grey)	Social prescribing, Community link service	Monitoring data analysis, interviews with service users	In-house evaluation	High
Maughan, Patel, Parveen, Braithwaite, Cook, Lillywhite, Cooke [88]	2015	England	Quantitative	CONNECT: social prescribing	Observational study	No description of research team	Low
Maund, Irvine, Reeves, Strong, Cromie, Dallimer, Davies [89]	2019	England	Mixed Methods	Wetlands for Wellbeing, Nature-based health intervention	Questionnaires, focus groups and semi-structured interviews for participants and healthcare professionals	No description of research team	Moderate
Mercer, Fitzpatrick, Grant, Chng, McConnachie, Bakshi, James-Rae, O'Donnell, Wyke [27]	2019	Scotland	Quantitative	Primary Care Community Links Practitioner	Quasi-experimental cluster-randomised controlled trial	No description of research team	High
Milestone tweed [90]	2018	Wales	Mixed Methods (grey)	Singing for Lung Health	Uncontrolled before-and-after design, interviews with staff	In-house evaluation	Low

Moffatt, Steer, Lawson, Penn, O'Brien [5]	2017	England	Qualitative	Ways to Wellness, Holistic social prescribing with link worker	Semi-structured interviews with service users	No description of research team	High
Mon Community Link [91]	2020	Wales	Qualitative (grey)	Social prescribing with link worker	Case studies	No description of research team	Low
Natural England [92]	2017	England	Review (grey)	Nature-based interventions	Evidence review	Mixed research team	Moderate
Panagioti, Reeves, Meacock, Parkinson, Lovell, Hann, Howells, Blakemore, Riste, Coventry, Blakeman, Sidaway, Bower [26]	2018	England	Quantitative	Health coaching	Trials within Cohorts design	No description of research team	High
Payne, Walton, Burton [23]	2020	England	Qualitative	Multi-activity social prescribing	Semi-structured interviews with service users	No description of research team	Moderate
Pescheny, Gunn, Randhawa, Pappas [2]	2019	England	Quantitative	Social prescribing with navigators	Uncontrolled before-and-after design	Mixed research team	Moderate
Pescheny, Randhawa, Pappas [93]	2018	England	Qualitative	Social prescribing with link worker	Semi-structured interviews with service users, navigators and GPs	Independent research team	Moderate
Pescheny, Randhawa, Pappas [29]	2020	England	Reviews	Social prescribing	Systematic review	Independent research team	High
Pesut, Duggleby, Warner, Fassbender, Antifeau, Hooper, Greig, Sullivan [94]	2018	Canada	Mixed Methods	N-CARE, nurse navigation in early palliative care	Pilot study using questionnaires and semi-structured interviews with service users	Mixed research team, including PPI	Moderate
Poulos, Marwood, Harkin, Opher, Clift, Cole, Rhee,	2018	Australia	Mixed Methods	Arts on Prescription	Program evaluation including uncontrolled before-and-after design,	Mixed research team	High

Beilharz, Poulos [95]					focus groups and interviews		
Prior, Coffey, Robins, Cook [96]	2019	England	Quantitative	Exercise on referral	Uncontrolled before-and-after design	No description of research team	Low
Public Health Wales [97]	2019	Wales	Quantitative (grey)	Social prescribing with link worker	Uncontrolled before-and-after design	Mixed research team	Moderate
Public Health Wales [98]	2018	Wales	Review (grey)	Social prescribing in Wales	Evidence mapping	Mixed research team	Low
Rainbow Centre Penley [99]	2019	Wales	Mixed Methods (grey)	Social prescribing	Referral numbers and case study	In-house evaluation	Low
Rainbow Centre Penley [100]	2019	Wales	Mixed Methods (grey)	Social prescribing	Referral numbers and case study	In-house evaluation	Low
Rainbow Centre Penley [101]	2019	Wales	Mixed Methods (grey)	Social prescribing	Case studies, patient reported outcomes	In-house evaluation	Low
Redmond, Sumner, Crone, Hughes [24]	2019	England	Qualitative	Arts on Prescription	Qualitative survey of service users	Research team, involved with programme development and implementation	Low
Rempel, Wilson, Durrant, Barnett [8]	2017	England	Reviews	Social referral programmes	Systematic review	Independent research team	High
Rhondda GP cluster [102]	2017	Wales	Mixed Methods (grey)	Well-being co-ordinator service	Monitoring data analysis, testimonial, survey with service users, practice and providers	In-house evaluation	Moderate
Skivington, Smith, Chng, Mackenzie, Wyke, Mercer [103]	2018	Scotland	Qualitative	Links Worker Programme, social prescribing to target negative impacts of the social determinants of health	Semi-structured interviews with community organisation representatives and Community Links Practitioners [link workers]	No description of research team	Moderate
Smith, Jimoh, Cross, Allan, Corbett, Sadler, Khondoker, Whitty, Valderas, Fox [104]	2019	England	Reviews	Social prescribing for frail older adults	Systematic review	Independent research team	Low

Social prescribing Torfaen [105]	2017	Wales	Mixed Methods (grey)	Social prescribing	Monitoring data analysis, case studies	In-house evaluation	Low
Social prescribing Torfaen [106]	2018	Wales	Mixed Methods (grey)	Social prescribing	Monitoring data analysis, case studies	In-house evaluation	Low
Social Value Cymru [107]	2019	Wales	Mixed Methods (grey)	Social Prescribing via Community Link Officer	Monitoring data analysis	In-house evaluation	Moderate
Stalker, Malloch, Barry, Watson [108]	2008	Scotland	Mixed Methods	Local area coordination for people with learning disabilities	Case studies, postal questionnaire and semi-structured interviews with co-ordinators and managers	Independent research team	Moderate
Stickley, Eades [109]	2013	England	Qualitative	Arts on Prescription	Semi-structured interviews with service users	Independent research team	Moderate
Stickley, Hui [110]	2012	England	Qualitative	Arts on Prescription	Narrative inquiry using in-depth interviews with service users	Mixed research team including PPI	Moderate
Stickley, Hui [111]	2012	England	Qualitative	Arts on Prescription	In-depth semi-structured interviews with referrers	Mixed research team including PPI	Moderate
The Growing Project [112]	2017	Wales	Mixed Methods (grey)	Therapeutic horticultural support, social prescribing in community gardening	Monitoring data analysis, interviews with service users	In-house evaluation	Low
Thomson, Lockyer, Camic, Chatterjee [113]	2018	England	Quantitative	Museum-based social prescription	Uncontrolled before-and-after design	No description of research team	Moderate
Todd, Camic, Lockyer, Thomson, Chatterjee [114]	2017	England	Qualitative	Museum-based social prescription	Semi-structured interviews and weekly diary entries from service users	No description of research team	Moderate
van de Venter, Buller [115]	2014	England	Mixed Methods	Arts on Prescription	Uncontrolled before-and-after design and interviews with service users	No description of research team	High
Vogelpoel, Jarrold [116]	2014	England	Mixed Methods	Arts on Prescription	Uncontrolled before-and-after design, interviews and dynamic	Mixed research team	Moderate

					observation proformas, case studies		
Warm Wales [117]	2019	Wales	Mixed Methods (grey)	Warm Wales, tackling fuel poverty	Case study design	In-house evaluation	Low
We are tempo [118]	2020	Wales	Mixed Methods (grey)	Time Credits, time based community support	Impact evaluation, surveys and journey mapping	In-house evaluation	Moderate
Webb, Thompson, Ruffino, Davies, Watkeys, Hooper, Jones, Walkters, Clayton, Thomas, Morris, Llewellyn, Ward, Wyatt-Williams, McDonnell [119]	2016	Wales	Quantitative	National Exercise on Referral Scheme	Uncontrolled before-and-after design	No description of research team	Low
Wellbeing 4 U [120]	2018	Wales	Mixed Methods (grey)	Social prescribing, Well-being co-ordinators	Monitoring data analysis, survey, case studies	In-house evaluation	Moderate
Welsh Government [121]	2010	Wales	Mixed Methods (grey)	National Exercise on Referral Scheme	Randomised controlled trial design with nested process and economic evaluation	Independent research team	Moderate
Whitelaw, Thirlwall, Morrison, Osborne, Tattum, Walker [122]	2017	Scotland	Qualitative	Social prescribing in General Practice	Case study design using semi-structured interviews with steering group, wider primary care team and community groups	No description of research team	Moderate
Wildman, Moffatt, Steer, Laing, Penn, O'Brien [21]	2019	England	Qualitative	Ways to Wellness, Holistic social prescribing with link worker	Semi-structured interviews with service users	No description of research team	Moderate
Woodall, Trigwell, Bunyan, Raine, Eaton, Davis, Hancock, Cunningham, Wilkinson [32]	2018	England	Mixed Methods	Social prescribing with well-being co-ordinators	Uncontrolled before-and-after design and interviews with service users	No description of research team	High

Woodhead, Collins, Lomas, Raine [22]	2017	England	Qualitative	Welfare advice services	Realist semi-structured interviews with general practice staff, advice staff and service funders	Independent research team	Low